APPENDIX 9.9

HYDROLOGY AND WATER QUALITY REPORTS

APPENDIX 9.9.1

PRELIMINARY DRAINAGE STUDY

Menifee Commerce Center
PP2019-005
City of Menifee, Riverside County, California

Preliminary Drainage Study

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SECTION 1 - SUMMARY

PURPOSE

The purpose of this report is to document the hydrologic and hydraulic analyses performed in support of the Menifee Commerce Center project located in the City of Menifee, County of Riverside, California. The project site is located at north of Romoland Line-A. The project proposes to build two distribution warehouses on approximately 70 total acres. This report will summarize the hydrologic and hydraulic analyses that were conducted in order to determine the necessary drainage improvements required to provide flood protection for the proposed building and safely convey the runoff through the site.

The scope of this report will include the following:

- Determine the peak 100-year and 10-year flow rates for the developed condition using the Riverside County Flood Control and Water Conservation District (RCFC&WCD) Rational Method.
- Determine the required storm drain facilities, alignment, and sizes required to flood protect the project site.
- Determine the necessary basin volume required to mitigate for increases in runoff.
- Preparation of a preliminary report summarizing the hydrology and hydraulic results.

DESCRIPTION OF WATERSHED

As previously described, the project is proposing two warehouse facilities (approximately 1,928,000 total square feet) on approximately 72 net acres of vacant land. Building-1 is 1,154,200 square feet on approximately 52 acres; Building-2 is 386,000 square feet on approximately 20 acres.

For the Building-1 site, the existing elevations across the site vary from 1437 at the easterly property line to 1431 at the westerly property line (NAVD88 datum). It is bound by Sherman Road to the west and Dawson Road to the east. The site currently slopes down at approximately 0.5% grade to the west. The existing drainage pattern for the site and the general area is characterized by sheet flows that follow the slope to the west.

For the Building-2 site, the existing elevations across the site vary from 1432 at the easterly property line to 1428 at the westerly property line (NAVD88 datum). It is bound by Trumble Road to the west and Sherman Road to the east. The site currently slopes down at approximately 0.3% grade to the west. The existing drainage pattern for the site and the general area is characterized by sheet flows that follow the slope to the west.

The existing runoff from both sites continue to flow west until it is intercepted by a cutoff channel adjacent to the Interstate-215 off-ramp to Ethanac Road. Flow will ultimately reach and discharge into Romoland Line-A which drains into the San Jacinto River before finally reaching Canyon Lake and Lake Elsinore.

PROPOSED CONDITIONS

The project sites are impacted by offsite flows since Sherman Road and Dawson Road are not currently built and do not intercept offsite run-on. There is also a channel that discharges flow at the northeast corner of the Building-1 site. Three offsite storm drains are proposed; one each in Trumble Road, Sherman Road, and Dawson Road. The storm drains will capture offsite runoff and convey it to Line-A. The proposed project sites will also construct Sherman Road and Dawson Road, and they will widen Trumble Road to ultimate width.

Onsite flows generated by the proposed projects will surface flow through the site utilizing ribbon gutters. Minimal subsurface storm drain will be used to convey flow into each site's proposed detention

basin. The two basins are both located along each site's westerly property line. The Building-1 basin will discharge into the Sherman storm drain; the Building-2 basin will discharge into the Trumble storm drain.

The last half-mile reach of Line-A connecting to the San Jacinto River is not built out to ultimate. This makes the two project sites in an HCOC nonexempt area. To mitigate the increase in runoff and not adversely affect the downstream facilities, the 2-year, 24-hour storm will be routed to match existing flowrates for both sites. The flows will be routed by storing the volume in the basins and pumping at a rate to meet drawdown requirements. All high flows will by-pass the basin via a splitter manhole and gravity flow from the sites.

METHODOLOGY

HYDROLOGY

Hydrologic calculations were performed in accordance with the RCFC&WCD Hydrology Manual, dated April 1978. The Rational Method was utilized in determining peak flow rates and preliminary sizing of pipes.

The hydrological parameters, including rainfall values and soil types were derived from NOAA Atlas 14 data and the RCFC&WCD Hydrology Manual. The isohyetal maps and soil map have been included in Section 2.

Rational Method calculations were performed using a computer program developed by CivilDesign Corporation and Joseph E. Bonadiman and Associates Inc. The computer program is commonly referred to as CivilD which incorporates the hydrological parameters outlined in the RCFC&WCD Hydrology Manual.

The Rational Method was used to determine the peak flow rates to size and design the drainage facilities need to convey onsite flows through the sites to the proposed basins. The flow rates were computed by generating a hydrologic "link-node" model in which the overall area is divided into separate drainage sub-areas, each tributary to a concentration point (node) determined by the proposed layout and grading.

The Unit Hydrograph Method was used to determine the peak flow rates and volumes associated with the 100-year storm events for the site. Calculations were performed for both the existing condition and developed condition to be used in the analysis of the proposed basin. See Section 2 for additional information and results regarding the hydrologic analyses performed for this project.

HYDRAULICS

Water quality calculations were performed using spreadsheets that were created by RCFC&WCD. Preliminary calculations and additional details can be found in the PWQMP.

Basin routing calculations were performed using the CivilD computer program. The CivilD program utilizes the Modified-Puls methodology to routes unit hydrographs through a basin using the stage-storage and stage-discharge curves determined from the proposed basin design. See Section 3 for additional discussion and results.

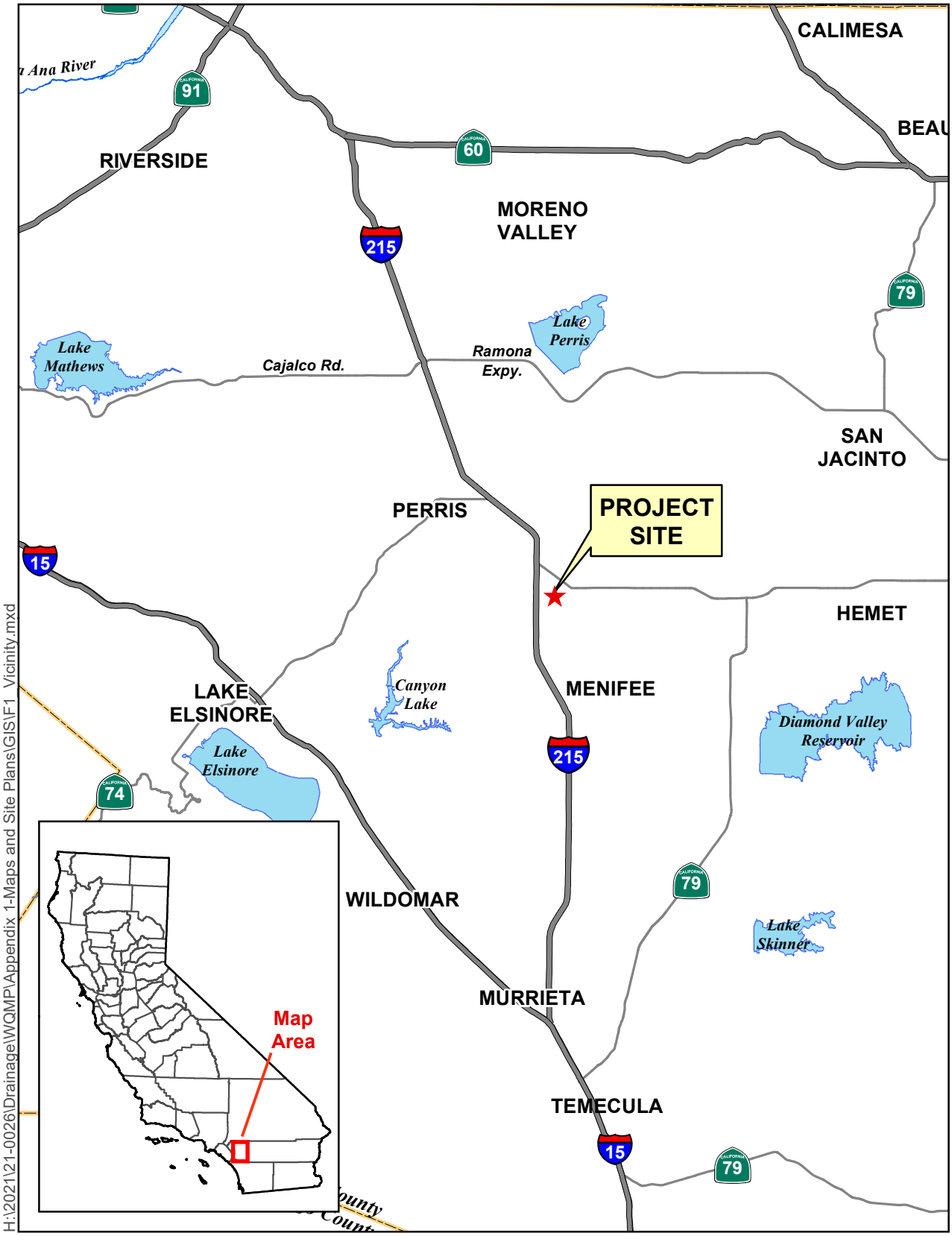
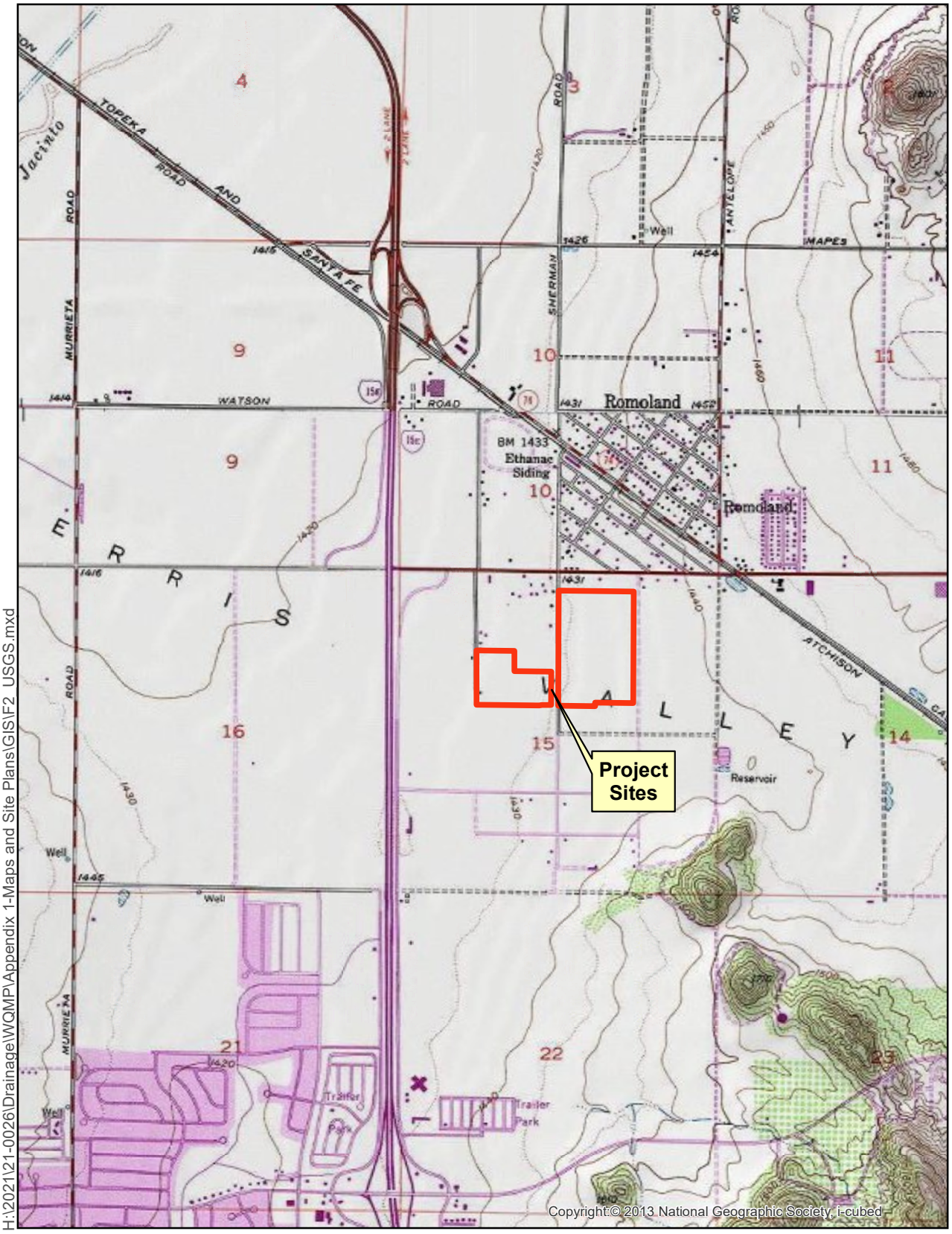


Figure 1. Vicinity Map

0 2.5 5 Miles



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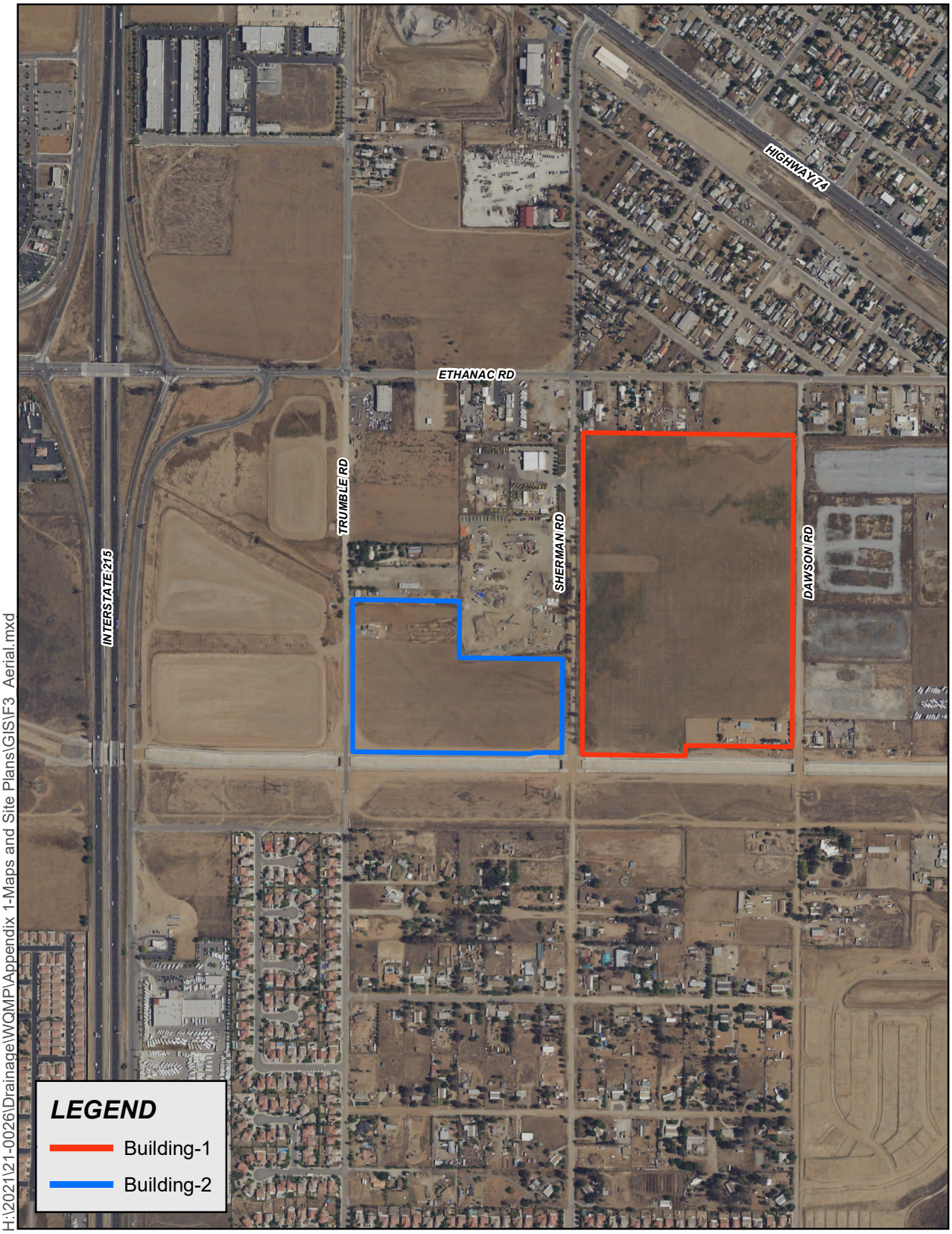
Sources: ESRI / USGS 7.5min Quad
DRGs: PERRIS

Figure 2. USGS Topography Map

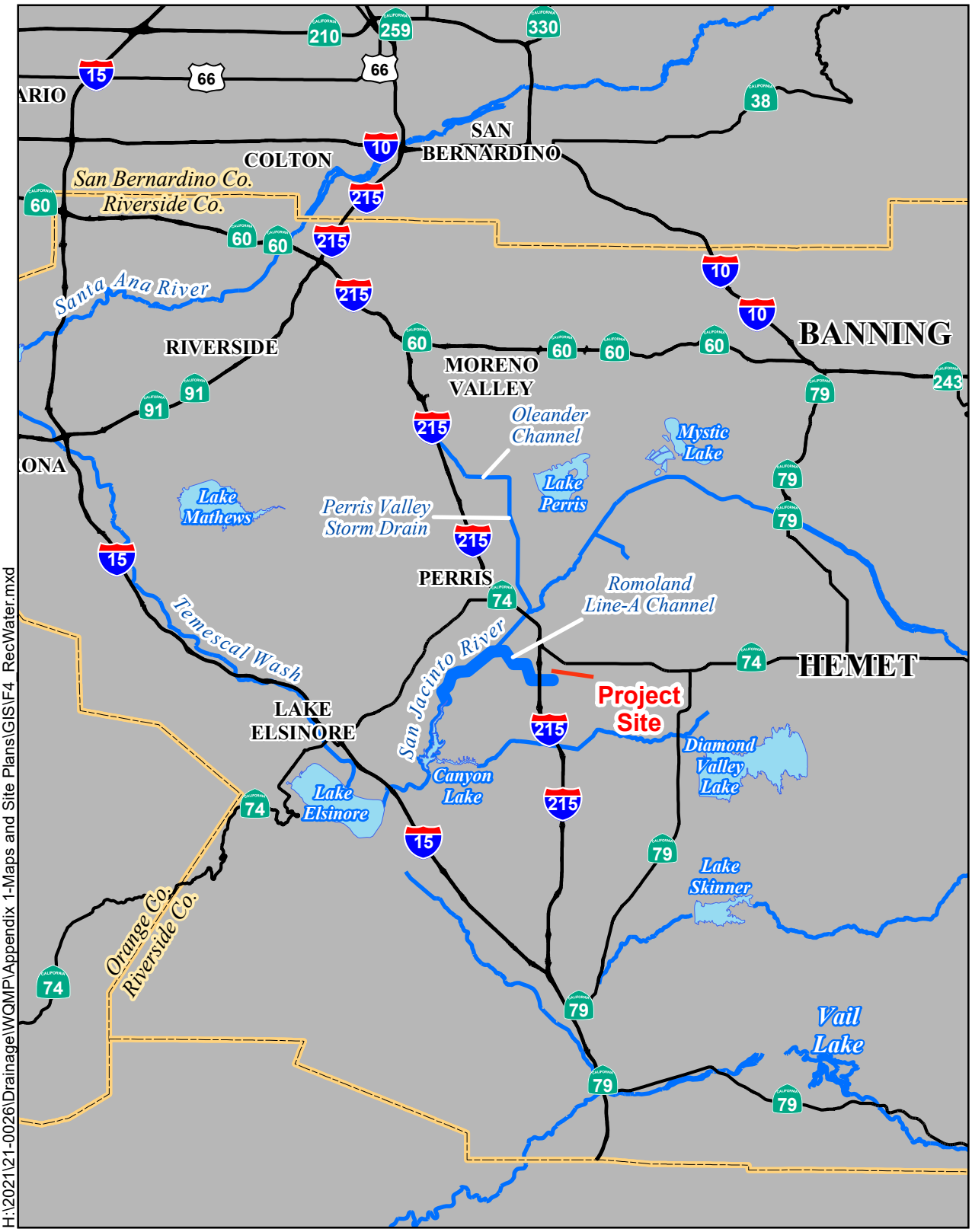
0 1,000 2,000
Feet



Sources: County of Riverside GIS, 2013; Eagle Aerial, April 2016.

Figure 3. Aerial Photograph

0 400 800 Feet



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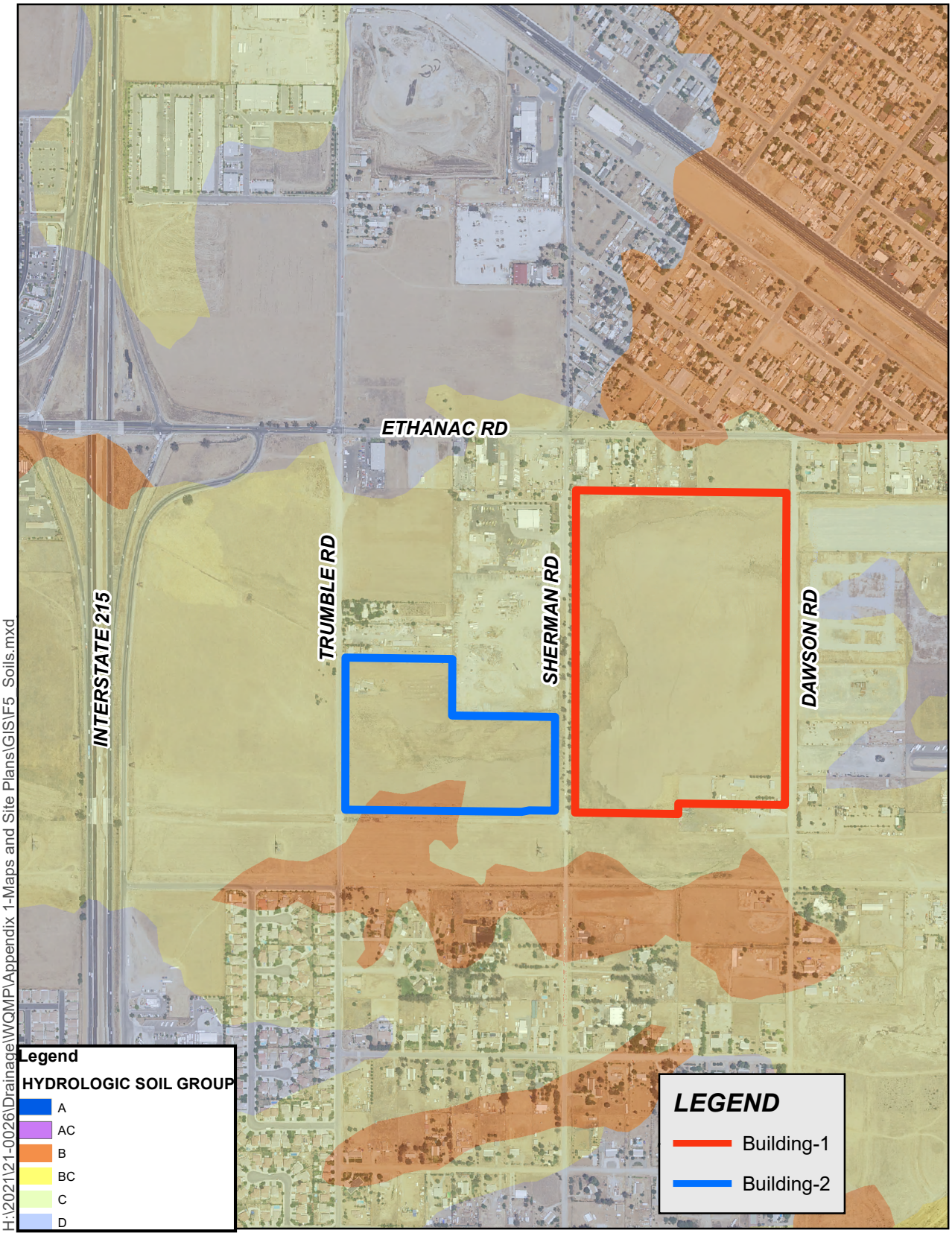
Sources: USGS 30 Meter DEM;
USGS Digital Line Graph

Figure 4. Receiving Waterbodies



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Eagle Aerial, April 2010;
Riverside County GIS, 2012
RCFC&WCD Hydology Manual Plate C-1.30

Figure 5. Soils Map

SECTION 2 - HYDROLOGY ANALYSIS

HYDROLOGY PARAMETERS

The RCFC&WCD Hydrology Manual and NOAA Atlas 14 were used to determine several of the hydrological parameters; see Appendix A for all data used in the analysis. The following rainfall depths were utilized in the hydrology analyses, which were obtained from NOAA Atlas 14 data:

Table 1 – Precipitation Values

	Duration
Storm Event	1-Hour (inches)
2-Year	0.51
100-Year	1.62

The value for slope of intensity was determined to be 0.50 from Plate D-4.6 from the RCFC&WCD Hydrology Manual.

Based on the Plate C-1.42 (Romoland) in the RCFC&WCD Hydrology Manual, the project site is classified as soil type C. The soils map is included in Appendix A.

The cover type was determined based on the existing land cover and proposed land use of the site. Hydrological computations for the existing condition were done using 'Undeveloped – Poor Cover'. The residential\commercial landscaping cover type was used to represent the developed condition. Table 2 below summarizes the runoff index values and the recommended values for percentage of impervious cover for each category:

Table 2 – Cover Type

Cover Type	Soil Group A	Soil Group B	Soil Group C	Soil Group D	Percentage of Impervious Cover
Undeveloped Poor Cover	67	78	86	89	0%
Commercial Landscaping	32	56	69	75	90%

ONSITE RATIONAL METHOD HYDROLOGY

The rational method was used to determine peak flow rates in order to adequately size the proposed subsurface storm drains and associated inlets used to convey onsite flows to the proposed basins. The projects were modeled as commercial land use which assumes a 10% pervious cover which is slightly more conservative than what is proposed.

For Building-1, the eastern portion (approximately 23 acres) drains to onsite Line-A and is conveyed west to the detention basin/manhole splitter. The western portion (approximately 27 acres) surface flow towards the basin and conveyed to it via short stretches of pipe (onsite Lines-B, -C, and -D). A peak 100-year runoff 132.5 cfs is generated by the site. A weir structure in the splitter manhole will be capable of passing the 100-year flow.

For Building-2, the northern portion (approximately 14 acres) drains to onsite Line-A, except for the westerly truck parking which surface flows to the detention basin. Line-A is conveyed west to the detention basin/manhole splitter. The southern portion (approximately 6 acres) drains to onsite Line-B which is conveyed to the detention basin/manhole splitter. A peak 100-year runoff 55.2 cfs is generated by the site. A weir structure in the splitter manhole will be capable of passing the 100-year flow.

The following table summarizes the rational method results at key points:

Table 3 – Rational Method Results

Point of Interest	10-Year Peak Flow Rate (cfs)	100-Year Peak Flow Rate (cfs)
Building-1		
Node 103 – Flow tributary to Line-A	40.2	68.1
Node 201 – Flow tributary to Line-B	16.8	28.3
Node 301 – Flow tributary to Line-C	12.3	20.8
Node 402 – Flow tributary to Line-D	20.7	35.1
Total Flow from Building-1	77.8	132.5
Building-2		
Node 104 – Flow tributary to Line-A	30.5	52.0
Node 103-1- Flow tributary to Lat A-1	7.5	12.5
Node 104-1- Flow tributary to Lat A-2	1.7	2.8
Node 203 – Flow tributary to Line-B	12.5	21.3
Total Flow from Building-2	32.4	55.2

The rational method output files and hydrology map have been included in Appendix A.

ONSITE UNIT HYDROGRAPH METHOD HYDROLOGY

The unit hydrograph method was used to determine the peak flow rates and volumes in order to adequately size the proposed basins to address HCOC. Unit hydrographs were performed for both the existing condition and developed condition. The existing condition is used to establish a baseline for comparative purposes. The developed condition is used for design purposes, it was utilized in the basin routing analysis in order to size and analyze the proposed basins. The following table summarizes the results of the unit hydrograph analysis:

Table 4 – 2-Year, 24-Hour Unit Hydrograph Results

	Existing Condition		Proposed Condition	
Storm Event	Volume (Ac-ft)	Peak Flow (cfs)	Volume (Ac-ft)	Peak Flow (cfs)
Building-1	1.258	5.2	6.854	11.1
Building-2	0.499	2.1	1.128	3.7

The unit hydrograph output files and hydrology map have been included in Appendix A.

SECTION 3 - HYDRAULIC ANALYSIS

ONSITE STORM DRAIN FACILITIES

The projects propose subsurface storm drains and will utilize curb and gutter, curb cuts, and u-channels to convey onsite flows to each respective detention basin. A summary of each system has been provided and the results of the hydraulic analyses are included in Appendix B.

Building-1

Building-1 proposes four subsurface storm drain systems to convey onsite flows. The runoff will discharge into Basin-1/splitter manhole along the westerly property line. From the detention basin, runoff will flow to Line A-1 in Sherman Road before out-falling to Romoland Line-A.

Line-A (Onsite)

The eastern portion of the project site will surface flow and be collected by Line-A. Line-A, is a 30-inch HDPE Duraslot storm drain upstream that transitions into a 48-inch HDPE storm drain downstream. Line-A proposes to convey the 100-year peak flow rate to Basin-1. A normal depth calculation was used in the CivilD estimate pipe size function to determine the appropriate size for Line-A. A hydraulic model for Line-A will be provided during final engineering to further assess the storm drain design.

Line-B (Onsite)

The northwest portion of the project site will surface flow to a low point and be collected by Line-B. Line-B, is a 24-inch HDPE storm drain. Line-B proposes to convey the 100-year peak flow rate to Basin-1. A normal depth calculation was used in the CivilD estimate pipe size function to determine the appropriate size for Line-B. A hydraulic model for Line-B will be provided during final engineering to further assess the storm drain design.

Line-C (Onsite)

The center-west portion of the project site will surface flow to a low point and be collected by Line-C. Line-C, is a 18-inch HDPE storm drain. Line-C proposes to convey the 100-year peak flow rate to Basin-1. A normal depth calculation was used in the CivilD estimate pipe size function to determine the appropriate size for Line-C. A hydraulic model for Line-C will be provided during final engineering to further assess the storm drain design.

Line-D (Onsite)

The southwest portion of the project site will surface flow to a low point and be collected by Line-D. Line-D, is a 24-inch HDPE storm drain. Line-D proposes to convey the 100-year peak flow rate to Basin-1. A normal depth calculation was used in the CivilD estimate pipe size function to determine the appropriate size for Line-D. A hydraulic model for Line-D will be provided during final engineering to further assess the storm drain design.

Splitter Manhole

The splitter manhole will be located just south of Basin-1. It will have an internal weir to keep the HCOC mitigation volume onsite while it is pumped. All high flows will bypass weir and continue to the Sherman Road storm drain. The weir will have a crest length of 16' and bypass the 100-year flowrate of 132 cfs with 2.0-feet of head.

Building-2

Building-2 proposes two subsurface storm drain systems to convey onsite flows. The runoff will discharge into Basin-2/splitter manhole along the westerly property line. From the detention basin, runoff will flow to Line A-21 in Trumble Road before out-falling to Romoland Line-A.

Line-A (Onsite)

The northern portion of the project site will surface flow and be collected by Line-A. Line-A, is a 24-inch HDPE storm drain upstream that transitions into a 36-inch HDPE storm drain downstream. Line-A proposes to convey the 100-year peak flow rate to Basin-2. A normal depth calculation was used in the CivilD estimate pipe size function to determine the appropriate size for Line-A. A hydraulic model for Line-A will be provided during final engineering to further assess the storm drain design.

Lat A-1 (Onsite)

The northern portion of the truck parking will surface flow and be collected by Lat A-1. Lat A-1, is a 18-inch HDPE storm drain. Lat A-1 proposes to convey the 100-year peak flow rate to Line-A. A normal depth calculation was used in the CivilD estimate pipe size function to determine the appropriate size for Lat A-1. A hydraulic model for Lat A-1 will be provided during final engineering to further assess the storm drain design.

Lat A-2 (Onsite)

The northern portion of the auto parking will surface flow and be collected by Lat A-2. Lat A-1, is a 18-inch HDPE storm drain. Lat A-2 proposes to convey the 100-year peak flow rate to Line-A. A normal depth calculation was used in the CivilD estimate pipe size function to determine the appropriate size for Lat A-2. A hydraulic model for Lat A-2 will be provided during final engineering to further assess the storm drain design.

Line-B (Onsite)

The southern portion of the project site will surface flow and be collected by Line-B. Line-B, is a 24-inch HDPE storm drain. Line-B proposes to convey the 100-year peak flow rate to Basin-2. A normal depth calculation was used in the CivilD estimate pipe size function to determine the appropriate size for Line-B. A hydraulic model for Line-B will be provided during final engineering to further assess the storm drain design.

Line-C (Onsite)

Line-C connects detention Basin-2 to the splitter manhole; it will act as an equalization pipe during high flow runoff events. It will be sized to handle the 100-year peak flow rate. A 36-inch HDPE storm drain will adequately equalize the 100-year peak flow between the splitter manhole and Basin-2.

Splitter Manhole

The splitter manhole will be located just south of Basin-2. It will have an internal weir to keep the HCOC mitigation volume onsite while it is pumped. All high flows will bypass weir and continue to the Sherman Road storm drain. The weir will have a crest length of 16' and bypass the 100-year flowrate of 55 cfs with 1.1-feet of head.

OFFSITE STORM DRAIN FACILITIES

As part of this project, Trumble Road, Sherman Road, and Dawson Road will be improved/constructed. Storm drain will also be added in all three streets. They are designed using MDP flowrates for Romoland Line-A. The 100-year water surface elevation in Line-A varies from 1434.3 at Dawson, 1430.4 at Sherman, and 1426.6 at Trumble. Because of this, hydraulic conditions in the three storm drains may require additional width than what is preliminarily proposed.

Line A-21 (Trumble Road)

Line A-21 will capture the runoff from the tributary area east of Trumble, west of Sherman, and between Ethanac and Romoland Line-A. Line A-21 will be an 8'Wx3'H RCB upstream and convey a 100-year flowrate of roughly 88 cfs; Line A-21 will be a 9'Wx4'H RCB downstream and convey a 100-year flowrate of roughly 145 cfs. The storm drain will need an excessive cross-section due to limited slope capacity from cover since the pipe is running parallel to contour. A hydraulic model for Line A-21 will be provided during final engineering to further assess the storm drain design

Line A-1 (Sherman Road)

Line A-1 will capture the runoff from the tributary area east of Sherman, west of Dawson, and between Ethanac and Romoland Line-A. Line A-1 will be a 7'Wx3'H RCB upstream and convey a 100-year flowrate of roughly 90 cfs; Line A-1 will be a 9'Wx4.5'H RCB downstream and convey a 100-year flowrate of roughly 216 cfs. The storm drain will need an excessive cross-section due to limited slope capacity from cover since the pipe is running parallel to contour. A hydraulic model for Line A-1 will be provided during final engineering to further assess the storm drain design

Line A-1a (Dawson Road)

Line A-1a will capture the runoff from the drainage channel in the northeast corner of Building-1 that conveys flow runoff from the east of Antelope Road. Line A-1a will be a 4.5'Wx3'H RCB and convey a 100-year flowrate of roughly 48 cfs. The storm drain will need an excessive cross-section due to limited slope capacity from cover since the pipe is running parallel to contour. A hydraulic model for Line A-1a will be provided during final engineering to further assess the storm drain design

BASIN ROUTING ANALYSIS

A routing analysis was completed to demonstrate that the basin contains substantial volume needed to mitigate for HCOC requirements.

Basin routing calculations were conducted for the project sites. A stage-storage-discharge table was determined for the project site. The following table presents the result of routing analysis for the 24-hour 2-year storm event to demonstrate that the basins provide the necessary storage volume needed to mitigate for HCOC.

Table 5 – 2-Year, 24-Hour Basin Routing Results

	Existing Condition		Proposed Condition		Basin Routing Results		
Storm Event	Volume (AC-ft)	Peak Flow (cfs)	Volume (AC-ft)	Peak Flow (cfs)	Peak Flow (cfs)	Maximum Basin Depth (feet)	Water Surface Elevation
Building-1	1.258	5.2	6.854	11.1	2.5	5.9	1429.9
Building-2	0.499	2.1	1.128	3.7	1.0	2.2	1422.2

The basin routing calculations and other hydraulic calculations have been provided in Appendix B.

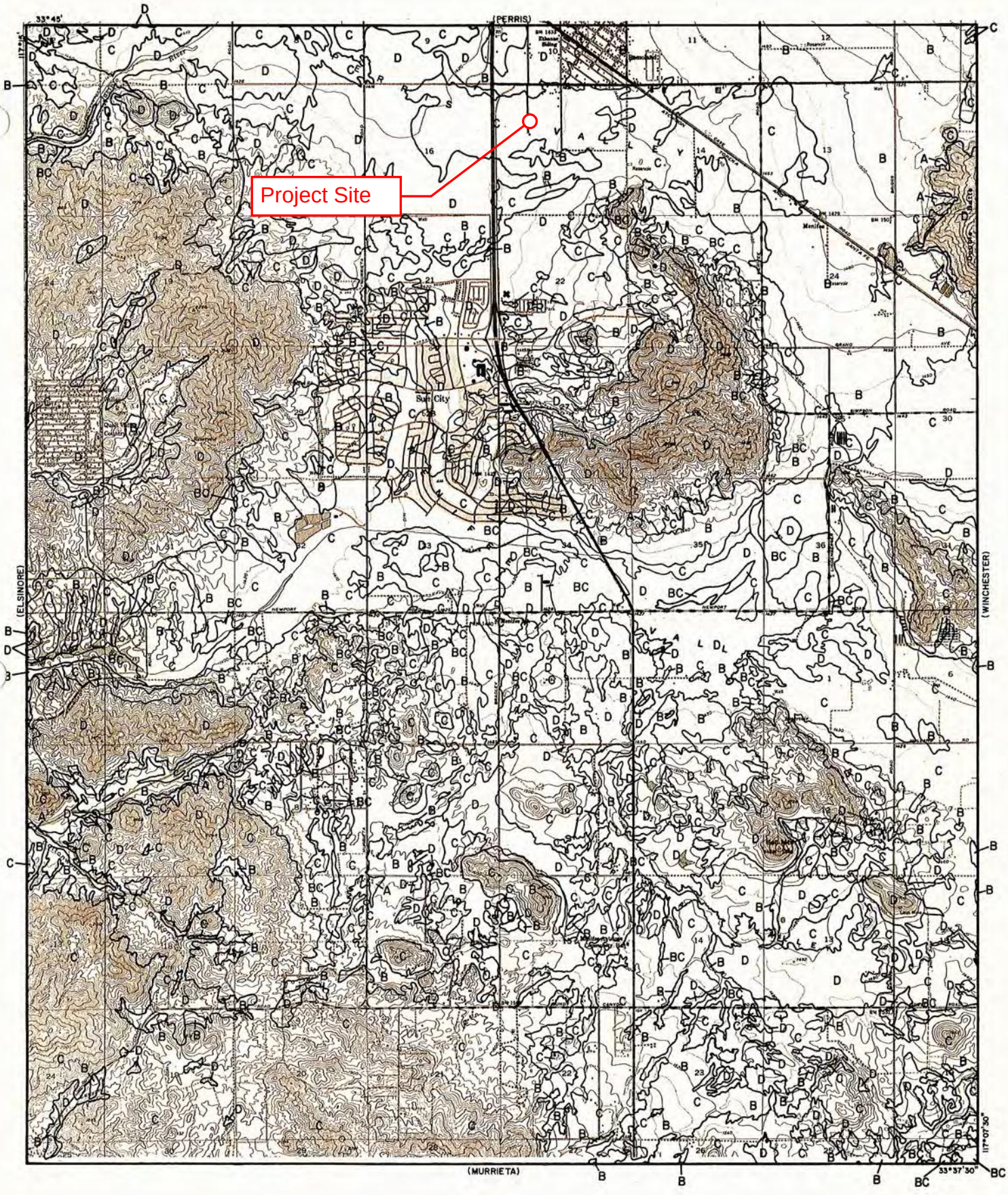
SECTION 4 - CONCLUSION

Based on the analyses and results of this report, the following conclusions were derived from the hydrology and hydraulic results:

- The proposed drainage improvements will adequately convey flows to the basins and Romoland Line-A while providing flood protection for the 100-year storm event.
- The proposed basins will provide adequate volume to mitigate for HCOC.
- The proposed project will not impact flooding condition to upstream or downstream properties.

APPENDIX A – HYDROLOGY

HYDROLOGIC SOILS GROUP MAP (PLATE C-1.42)



LEGEND

SOILS GROUP BOUNDARY

A SOILS GROUP DESIGNATION

RCFC & WCD

HYDROLOGY MANUAL

0 FEET 5000

HYDROLOGIC SOILS GROUP MAP FOR ROMOLAND

PLATE C-1.42

HYDROLOGICAL PARAMETERS

NOAA Atlas 14, Volume 6, Version 2
Location name: Menifee, California, USA*
Latitude: 33.737°, Longitude: -117.1825°
Elevation: 1431.48 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.086** (0.072-0.104)	**0.124** (0.104-0.150)	**0.177** (0.147-0.214)	**0.221** (0.183-0.271)	**0.285** (0.228-0.361)	**0.337** (0.263-0.436)	**0.391** (0.298-0.520)	**0.450** (0.332-0.615)	**0.533** (0.377-0.762)	**0.601** (0.410-0.890)
10-min	**0.123** (0.103-0.149)	**0.178** (0.149-0.215)	**0.253** (0.211-0.307)	**0.317** (0.262-0.388)	**0.409** (0.326-0.518)	**0.483** (0.377-0.625)	**0.561** (0.427-0.745)	**0.645** (0.476-0.882)	**0.764** (0.541-1.09)	**0.862** (0.588-1.28)
15-min	**0.149** (0.125-0.180)	**0.215** (0.180-0.260)	**0.306** (0.255-0.371)	**0.384** (0.317-0.469)	**0.495** (0.395-0.626)	**0.584** (0.456-0.756)	**0.678** (0.516-0.901)	**0.780** (0.576-1.07)	**0.924** (0.654-1.32)	**1.04** (0.711-1.54)
30-min	**0.244** (0.204-0.294)	**0.352** (0.294-0.425)	**0.501** (0.417-0.606)	**0.627** (0.518-0.767)	**0.808** (0.645-1.02)	**0.954** (0.745-1.24)	**1.11** (0.843-1.47)	**1.27** (0.941-1.74)	**1.51** (1.07-2.16)	**1.70** (1.16-2.52)
60-min	**0.356** (0.298-0.429)	**0.514** (0.430-0.621)	**0.731** (0.610-0.886)	**0.916** (0.757-1.12)	**1.18** (0.942-1.49)	**1.39** (1.09-1.80)	**1.62** (1.23-2.15)	**1.86** (1.38-2.55)	**2.21** (1.56-3.15)	**2.49** (1.70-3.68)
2-hr	**0.526** (0.440-0.634)	**0.716** (0.598-0.865)	**0.972** (0.810-1.18)	**1.19** (0.981-1.45)	**1.49** (1.19-1.88)	**1.72** (1.35-2.23)	**1.97** (1.50-2.62)	**2.23** (1.65-3.05)	**2.60** (1.84-3.71)	**2.89** (1.97-4.28)
3-hr	**0.645** (0.540-0.778)	**0.859** (0.718-1.04)	**1.15** (0.956-1.39)	**1.39** (1.15-1.69)	**1.72** (1.37-2.17)	**1.98** (1.55-2.56)	**2.25** (1.71-2.99)	**2.53** (1.87-3.47)	**2.93** (2.07-4.18)	**3.24** (2.21-4.80)
6-hr	**0.909** (0.761-1.10)	**1.19** (0.994-1.44)	**1.56** (1.30-1.89)	**1.87** (1.54-2.28)	**2.29** (1.83-2.90)	**2.63** (2.05-3.40)	**2.97** (2.26-3.94)	**3.32** (2.46-4.55)	**3.82** (2.70-5.45)	**4.20** (2.87-6.22)
12-hr	**1.19** (1.00-1.44)	**1.56** (1.30-1.88)	**2.05** (1.71-2.48)	**2.45** (2.03-3.00)	**3.02** (2.41-3.82)	**3.46** (2.70-4.47)	**3.91** (2.98-5.19)	**4.39** (3.24-6.00)	**5.05** (3.57-7.21)	**5.58** (3.80-8.26)
24-hr	**1.55** (1.37-1.78)	**2.04** (1.80-2.36)	**2.71** (2.39-3.14)	**3.27** (2.86-3.82)	**4.06** (3.43-4.89)	**4.68** (3.88-5.76)	**5.33** (4.32-6.72)	**6.02** (4.75-7.79)	**6.99** (5.29-9.41)	**7.76** (5.69-10.8)
2-day	**1.83** (1.62-2.11)	**2.46** (2.17-2.84)	**3.32** (2.93-3.85)	**4.06** (3.54-4.73)	**5.09** (4.31-6.14)	**5.92** (4.91-7.28)	**6.79** (5.50-8.56)	**7.73** (6.09-10.00)	**9.04** (6.85-12.2)	**10.1** (7.41-14.1)
3-day	**1.95** (1.72-2.25)	**2.66** (2.35-3.07)	**3.64** (3.21-4.22)	**4.48** (3.91-5.23)	**5.67** (4.80-6.83)	**6.63** (5.50-8.15)	**7.64** (6.19-9.62)	**8.73** (6.88-11.3)	**10.3** (7.79-13.8)	**11.5** (8.45-16.1)
4-day	**2.09** (1.85-2.42)	**2.89** (2.56-3.34)	**4.00** (3.52-4.63)	**4.94** (4.32-5.77)	**6.30** (5.33-7.59)	**7.39** (6.13-9.09)	**8.55** (6.93-10.8)	**9.81** (7.74-12.7)	**11.6** (8.79-15.6)	**13.1** (9.57-18.2)
7-day	**2.36** (2.09-2.73)	**3.34** (2.95-3.86)	**4.71** (4.15-5.45)	**5.89** (5.14-6.87)	**7.59** (6.42-9.15)	**8.98** (7.45-11.0)	**10.5** (8.48-13.2)	**12.1** (9.53-15.6)	**14.4** (10.9-19.4)	**16.3** (12.0-22.7)
10-day	**2.49** (2.20-2.87)	**3.57** (3.15-4.12)	**5.08** (4.48-5.89)	**6.40** (5.59-7.47)	**8.31** (7.03-10.0)	**9.88** (8.20-12.2)	**11.6** (9.38-14.6)	**13.4** (10.6-17.4)	**16.1** (12.2-21.7)	**18.3** (13.4-25.5)
20-day	**2.92** (2.58-3.37)	**4.26** (3.76-4.92)	**6.17** (5.43-7.15)	**7.85** (6.86-9.16)	**10.3** (8.74-12.4)	**12.4** (10.3-15.2)	**14.6** (11.9-18.4)	**17.1** (13.5-22.2)	**20.8** (15.7-28.0)	**23.9** (17.5-33.2)
30-day	**3.50** (3.09-4.04)	**5.11** (4.51-5.90)	**7.42** (6.54-8.60)	**9.48** (8.28-11.1)	**12.5** (10.6-15.1)	**15.1** (12.5-18.6)	**17.9** (14.5-22.6)	**21.1** (16.6-27.3)	**25.7** (19.5-34.7)	**29.7** (21.7-41.3)
45-day	**4.10** (3.62-4.73)	**5.91** (5.22-6.83)	**8.55** (7.53-9.90)	**10.9** (9.53-12.7)	**14.5** (12.2-17.4)	**17.5** (14.5-21.5)	**20.8** (16.9-26.2)	**24.6** (19.4-31.8)	**30.2** (22.9-40.6)	**35.0** (25.6-48.7)
60-day	**4.79** (4.24-5.53)	**6.80** (6.00-7.85)	**9.74** (8.58-11.3)	**12.4** (10.8-14.5)	**16.4** (13.9-19.8)	**19.8** (16.4-24.4)	**23.7** (19.2-29.8)	**28.0** (22.1-36.2)	**34.5** (26.1-46.4)	**40.1** (29.4-55.9)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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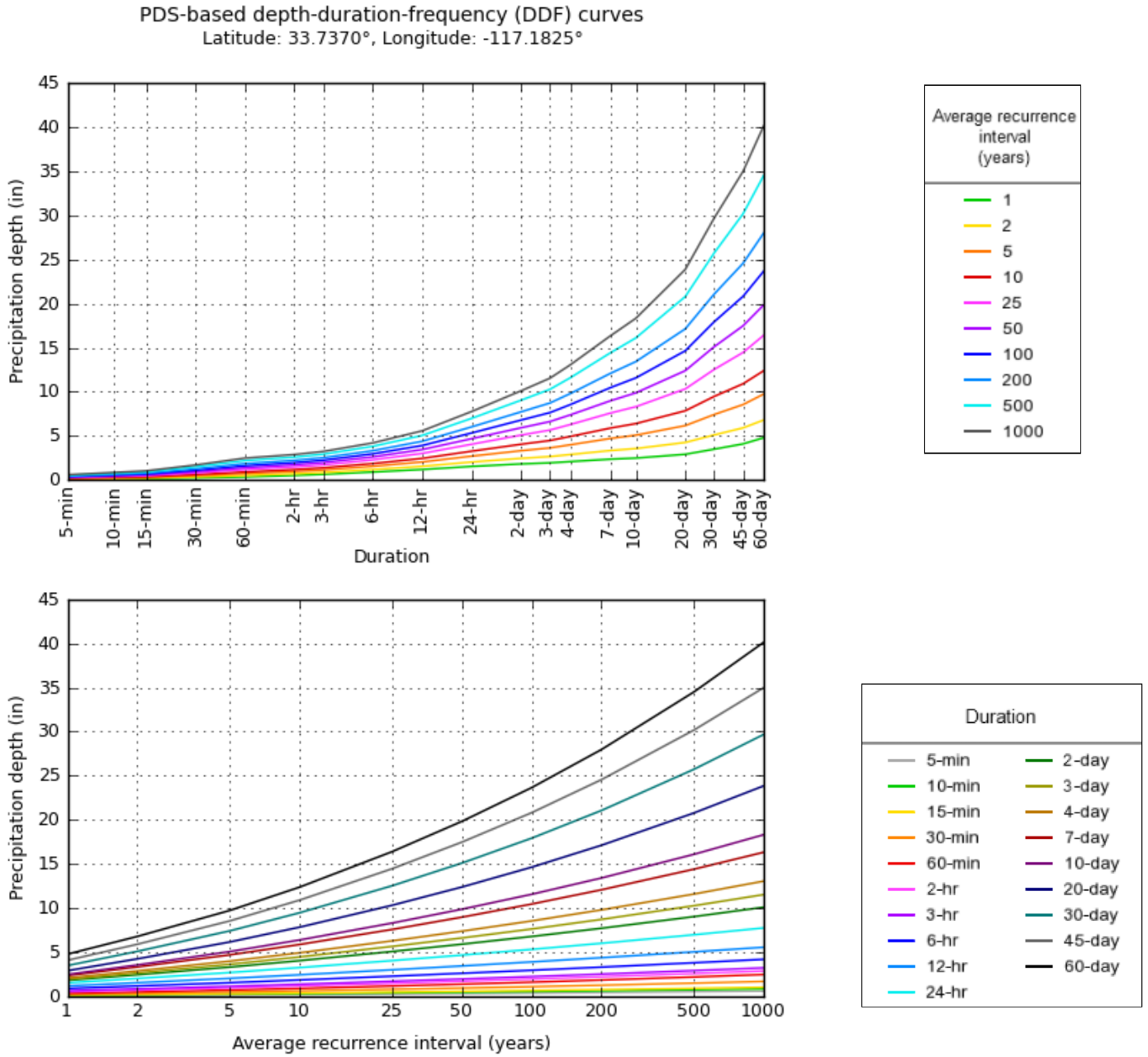
PF graphical



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Created (GMT): Sun May 2 23:32:12 2021

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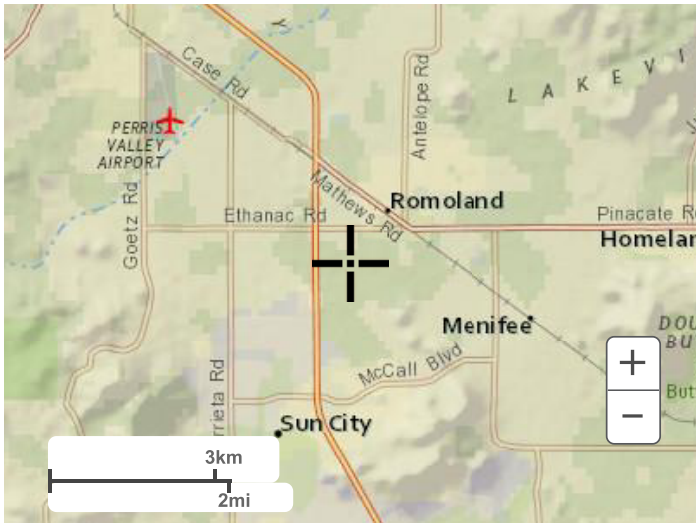
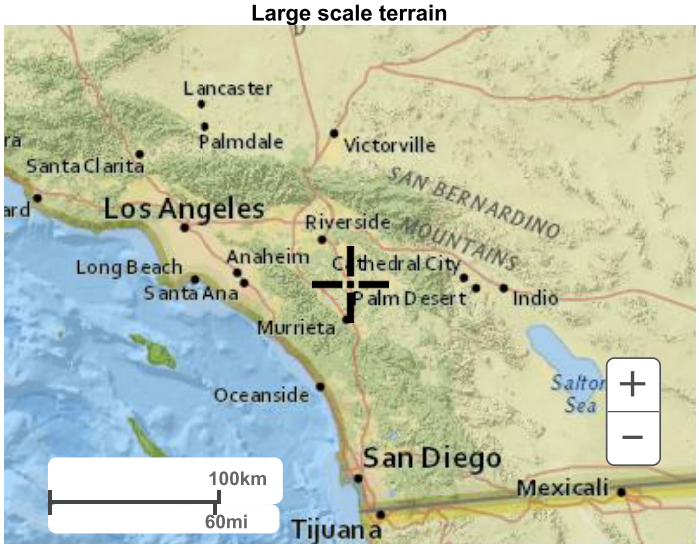
Maps & aerials

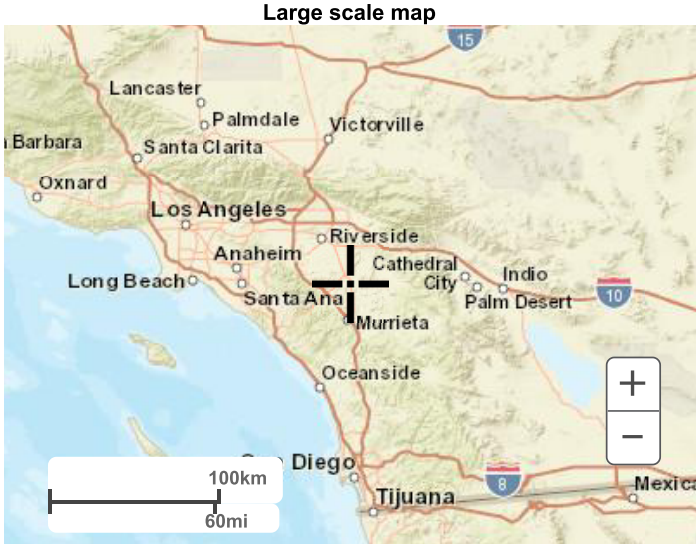
Small scale terrain



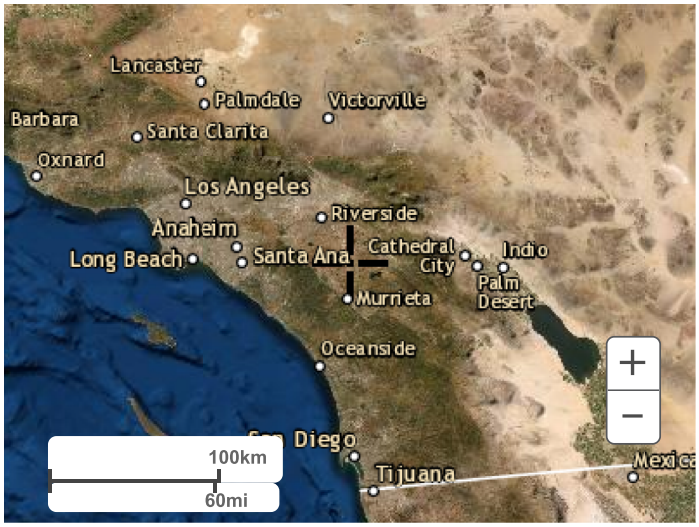
Large scale terrain



Large scale map



Large scale aerial



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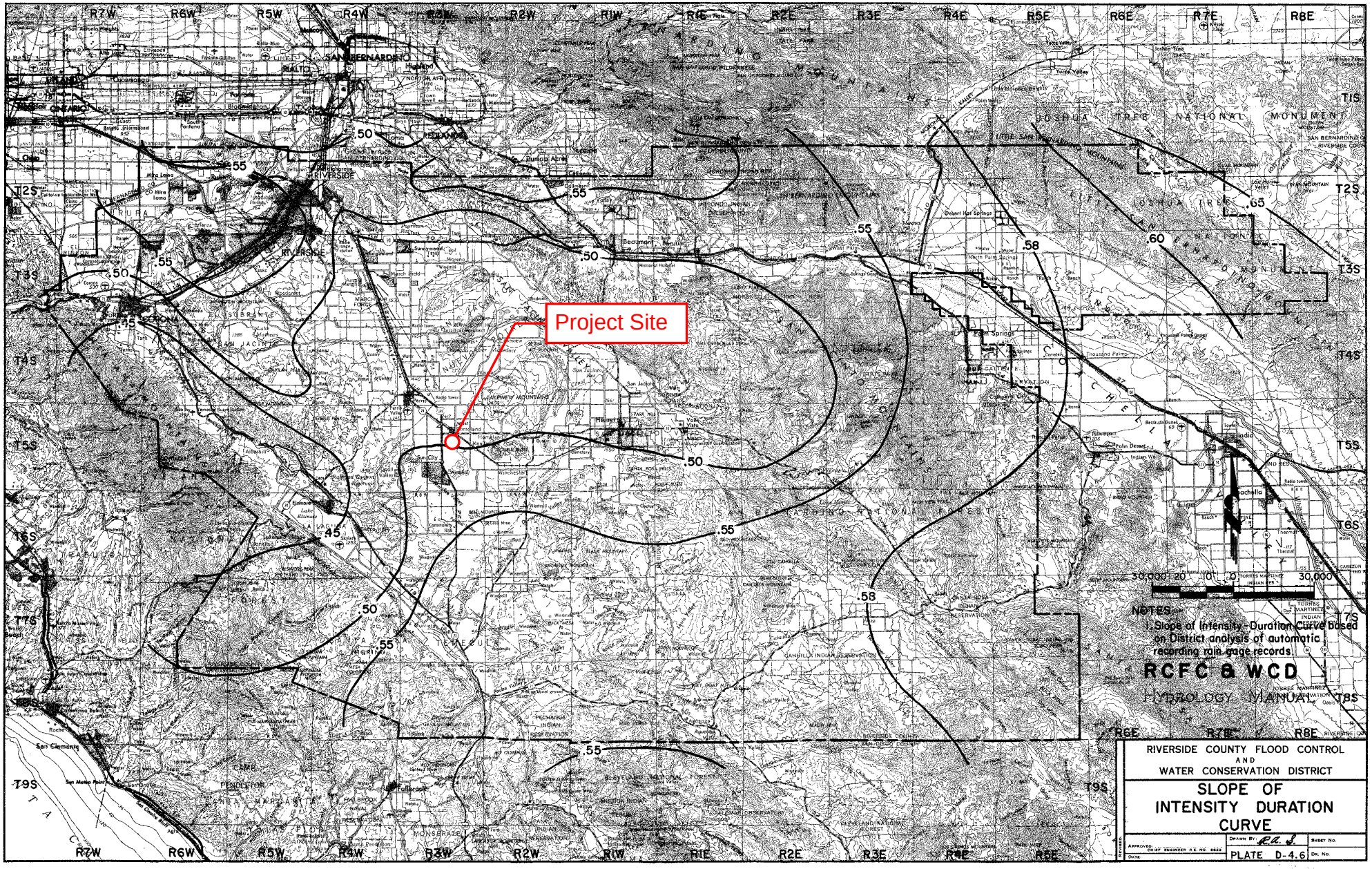
US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer


Project Site
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NOTES
1. Slope of Intensity-Duration Curve based on District analysis of automatic recording rain gage records
RCFC & WCD
HYDROLOGY MANUAL
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
SLOPE OF INTENSITY DURATION CURVE
PLATE D-4.6

10-YEAR ONSITE HYDROLOGY (RATIONAL METHOD)

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0
Rational Hydrology Study Date: 05/03/21 File:PROP10.out

21-0026 - MENIFEE COMMERCE CENTER
ONSITE RATIONAL METHOD HYDROLOGY
10 YEAR STORM EVENT - BUILDING 1
FN: PROP10.OUT TSW

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 4010

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 10.00 Antecedent Moisture Condition = 2

2 year, 1 hour precipitation = 0.514(In.)
100 year, 1 hour precipitation = 1.620(In.)

Storm event year = 10.0
Calculated rainfall intensity data:
1 hour intensity = 0.969(In/Hr)
Slope of intensity duration curve = 0.5000

++
Process from Point/Station 100.000 to Point/Station 101.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 867.000(Ft.)
Top (of initial area) elevation = 1437.000(Ft.)
Bottom (of initial area) elevation = 1432.500(Ft.)
Difference in elevation = 4.500(Ft.)
Slope = 0.00519 s(percent)= 0.52
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 12.861 min.
Rainfall intensity = 2.093(In/Hr) for a 10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.880
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000

```
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =     10.866(CFS)
Total initial stream area =        5.900(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      101.000 to Point/Station      102.000
**** IMPROVED CHANNEL TRAVEL TIME ****
________________________________________________________________________
Covered channel
Upstream point elevation =  1429.800(Ft.)
Downstream point elevation =  1428.700(Ft.)
Channel length thru subarea  =   448.000(Ft.)
Channel base width      =    2.000(Ft.)
Slope or 'Z' of left channel bank =   0.000
Slope or 'Z' of right channel bank =   0.000
Estimated mean flow rate at midpoint of channel =     18.269(CFS)
Manning's 'N'    = 0.012
Maximum depth of channel  =    4.000(Ft.)
Flow(q) thru subarea =     18.269(CFS)
Depth of flow =   1.959(Ft.), Average velocity =   4.661(Ft/s)
Channel flow top width =    2.000(Ft.)
Flow Velocity =    4.66(Ft/s)
Travel time  =    1.60 min.
Time of concentration =   14.46 min.

Sub-Channel No. 1 Critical depth =      1.375(Ft.)
  '     '       '     Critical flow top width =      2.000(Ft.)
  '     '       '     Critical flow velocity=    6.643(Ft/s)
  '     '       '     Critical flow area =      2.750(Sq.Ft)

 Adding area flow to channel
COMMERCIAL subarea type
Runoff Coefficient = 0.879
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      1.974(In/Hr) for a    10.0 year storm
Subarea runoff =     14.747(CFS) for      8.500(Ac.)
Total runoff =     25.613(CFS)  Total area =      14.400(Ac.)
Depth of flow =   2.594(Ft.), Average velocity =   4.937(Ft/s)

Sub-Channel No. 1 Critical depth =      1.719(Ft.)
  '     '       '     Critical flow top width =      2.000(Ft.)
  '     '       '     Critical flow velocity=    7.451(Ft/s)
  '     '       '     Critical flow area =      3.438(Sq.Ft)



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Process from Point/Station      102.000 to Point/Station      103.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------
Upstream point/station elevation =  1428.700(Ft.)
Downstream point/station elevation =  1427.600(Ft.)
Pipe length  =   440.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =    25.613(CFS)
Nearest computed pipe diameter  =     33.00(In.)
Calculated individual pipe flow  =    25.613(CFS)
Normal flow depth in pipe =   24.33(In.)
Flow top width inside pipe =   29.05(In.)
Critical Depth =   20.14(In.)
Pipe flow velocity =      5.45(Ft/s)
Travel time through pipe =    1.34 min.
Time of concentration (TC) =    15.81 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.000 to Point/Station      103.000
**** SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------
COMMERCIAL subarea type
Runoff Coefficient = 0.878
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =    15.81 min.
Rainfall intensity =      1.888(In/Hr) for a    10.0 year storm
Subarea runoff =     14.592(CFS) for      8.800(Ac.)
Total runoff =     40.205(CFS)  Total area =      23.200(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.000 to Point/Station      104.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------
Upstream point/station elevation =  1427.600(Ft.)
Downstream point/station elevation =  1423.900(Ft.)
Pipe length  =  1480.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =    40.205(CFS)
Nearest computed pipe diameter  =     39.00(In.)
Calculated individual pipe flow  =    40.205(CFS)
Normal flow depth in pipe =   28.88(In.)
Flow top width inside pipe =   34.20(In.)
Critical Depth =   24.22(In.)
Pipe flow velocity =      6.10(Ft/s)
Travel time through pipe =    4.04 min.
Time of concentration (TC) =    19.85 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.000 to Point/Station      104.000
**** CONFLUENCE OF MAIN STREAMS ****
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```
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     23.200(Ac.)
Runoff from this stream =     40.205(CFS)
Time of concentration =   19.85 min.
Rainfall intensity =     1.685(In/Hr)
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      200.000 to Point/Station      201.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
Initial area flow distance =   909.000(Ft.)
Top (of initial area) elevation =  1437.000(Ft.)
Bottom (of initial area) elevation =  1431.000(Ft.)
Difference in elevation =     6.000(Ft.)
Slope =    0.00660  s(percent)=       0.66
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   12.492 min.
Rainfall intensity =      2.124(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.880
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =     16.823(CFS)
Total initial stream area =        9.000(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      201.000 to Point/Station      500.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------
Upstream point/station elevation =  1426.000(Ft.)
Downstream point/station elevation =  1425.100(Ft.)
Pipe length  =    37.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =    16.823(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =    16.823(CFS)
Normal flow depth in pipe =   13.97(In.)
Flow top width inside pipe =   15.01(In.)
Critical depth could not be calculated.
Pipe flow velocity =     11.43(Ft/s)
Travel time through pipe =    0.05 min.
Time of concentration (TC) =    12.55 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      201.000 to Point/Station      500.000
**** CONFLUENCE OF MINOR STREAMS ****
```

```
Along Main Stream number: 2 in normal stream number 1
Stream flow area =      9.000(Ac.)
Runoff from this stream =     16.823(CFS)
Time of concentration =   12.55 min.
Rainfall intensity =     2.119(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      300.000 to Point/Station      301.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
Initial area flow distance =   695.000(Ft.)
Top (of initial area) elevation =  1439.000(Ft.)
Bottom (of initial area) elevation =  1431.000(Ft.)
Difference in elevation =     8.000(Ft.)
Slope =    0.01151  s(percent)=       1.15
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.039 min.
Rainfall intensity =      2.369(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.882
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =     12.325(CFS)
Total initial stream area =        5.900(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      301.000 to Point/Station      500.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------
Upstream point/station elevation =  1426.000(Ft.)
Downstream point/station elevation =  1424.700(Ft.)
Pipe length  =    37.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =    12.325(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =    12.325(CFS)
Normal flow depth in pipe =   11.55(In.)
Flow top width inside pipe =   12.62(In.)
Critical depth could not be calculated.
Pipe flow velocity =     12.15(Ft/s)
Travel time through pipe =    0.05 min.
Time of concentration (TC) =    10.09 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      301.000 to Point/Station      500.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------
Along Main Stream number: 2 in normal stream number 2
```

```
Stream flow area =      5.900(Ac.)
Runoff from this stream =     12.325(CFS)
Time of concentration =   10.09 min.
Rainfall intensity =     2.363(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      400.000 to Point/Station      401.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   697.000(Ft.)
Top (of initial area) elevation =  1437.600(Ft.)
Bottom (of initial area) elevation =  1433.000(Ft.)
Difference in elevation =     4.600(Ft.)
Slope =    0.00660  s(percent)=       0.66
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   11.233 min.
Rainfall intensity =      2.240(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.881
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      8.484(CFS)
Total initial stream area =        4.300(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      401.000 to Point/Station      402.000
**** IMPROVED CHANNEL TRAVEL TIME ****
________________________________________________________________________
Upstream point elevation =  1433.000(Ft.)
Downstream point elevation =  1431.000(Ft.)
Channel length thru subarea  =   352.000(Ft.)
Channel base width      =    0.000(Ft.)
Slope or 'Z' of left channel bank =  61.000
Slope or 'Z' of right channel bank =  65.000
Estimated mean flow rate at midpoint of channel =     14.641(CFS)
Manning's 'N'    = 0.015
Maximum depth of channel  =    2.000(Ft.)
Flow(q) thru subarea =     14.641(CFS)
Depth of flow =   0.324(Ft.), Average velocity =   2.218(Ft/s)
Channel flow top width =   40.789(Ft.)
Flow Velocity =    2.22(Ft/s)
Travel time  =    2.65 min.
Time of concentration =   13.88 min.

Sub-Channel No. 1 Critical depth =      0.320(Ft.)
  '     '       '     Critical flow top width =     40.359(Ft.)
  '     '       '     Critical flow velocity=    2.265(Ft/s)
  '     '       '     Critical flow area =      6.464(Sq.Ft)
```

```
 Adding area flow to channel
COMMERCIAL subarea type
Runoff Coefficient = 0.879
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      2.015(In/Hr) for a    10.0 year storm
Subarea runoff =     12.225(CFS) for      6.900(Ac.)
Total runoff =     20.709(CFS)  Total area =      11.200(Ac.)
Depth of flow =   0.369(Ft.), Average velocity =   2.418(Ft/s)

Sub-Channel No. 1 Critical depth =      0.367(Ft.)
  '     '       '     Critical flow top width =     46.266(Ft.)
  '     '       '     Critical flow velocity=    2.438(Ft/s)
  '     '       '     Critical flow area =      8.494(Sq.Ft)



++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      402.000 to Point/Station      500.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1426.000(Ft.)
Downstream point/station elevation =  1424.300(Ft.)
Pipe length  =    37.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =    20.709(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =    20.709(CFS)
Normal flow depth in pipe =   12.73(In.)
Flow top width inside pipe =   16.38(In.)
Critical depth could not be calculated.
Pipe flow velocity =     15.49(Ft/s)
Travel time through pipe =    0.04 min.
Time of concentration (TC) =    13.92 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      402.000 to Point/Station      500.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 2 in normal stream number 3
Stream flow area =     11.200(Ac.)
Runoff from this stream =     20.709(CFS)
Time of concentration =   13.92 min.
Rainfall intensity =     2.012(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1       16.823     12.55                2.119
2       12.325     10.09                2.363
```

```
3       20.709     13.92                  2.012
Largest stream flow has longer time of concentration
Qp =     20.709 + sum of
          Qb         Ia/Ib
          16.823 *    0.949 =     15.972
          Qb         Ia/Ib
          12.325 *    0.851 =     10.494
Qp =     47.176

Total of 3 streams to confluence:
Flow rates before confluence point:
      16.823      12.325      20.709
Area of streams before confluence:
        9.000       5.900       11.200
Results of confluence:
Total flow rate =     47.176(CFS)
Time of concentration =    13.919 min.
Effective stream area after confluence =     26.100(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      500.000 to Point/Station      500.000
**** SUBAREA FLOW ADDITION ****
________________________________________________________________________
COMMERCIAL subarea type
Runoff Coefficient = 0.879
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =    13.92 min.
Rainfall intensity =      2.012(In/Hr) for a    10.0 year storm
Subarea runoff =      1.946(CFS) for      1.100(Ac.)
Total runoff =     49.122(CFS)  Total area =      27.200(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      500.000 to Point/Station      104.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1424.000(Ft.)
Downstream point/station elevation =  1423.900(Ft.)
Pipe length  =    72.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =    49.122(CFS)
Nearest computed pipe diameter  =     45.00(In.)
Calculated individual pipe flow  =    49.122(CFS)
Normal flow depth in pipe =   37.13(In.)
Flow top width inside pipe =   34.20(In.)
Critical Depth =   25.70(In.)
Pipe flow velocity =      5.04(Ft/s)
Travel time through pipe =    0.24 min.
Time of concentration (TC) =    14.16 min.
```

++
Process from Point/Station 500.000 to Point/Station 104.000
**** CONFLUENCE OF MAIN STREAMS ****
_____
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area = 27.200(Ac.)
Runoff from this stream = 49.122(CFS)
Time of concentration = 14.16 min.
Rainfall intensity = 1.995(In/Hr)
Summary of stream data:

Stream No.	Flow rate (CFS)	TC (min)	Rainfall Intensity (In/Hr)
1	40.205	19.85	1.685
2	49.122	14.16	1.995

Largest stream flow has longer or shorter time of concentration
Qp = 49.122 + sum of
Qa Tb/Ta
40.205 * 0.713 = 28.671
Qp = 77.792

Total of 2 main streams to confluence:
Flow rates before confluence point:
40.205 49.122
Area of streams before confluence:
23.200 27.200

Results of confluence:
Total flow rate = 77.792(CFS)
Time of concentration = 14.157 min.
Effective stream area after confluence = 50.400(Ac.)
End of computations, total study area = 50.40 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number = 69.0

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0
Rational Hydrology Study Date: 08/06/21 File:PROP10.out

21-0026 - MENIFEE COMMERCE CENTER
ONSITE RATIONAL METHOD HYDROLOGY
10 YEAR STORM EVENT - BUILDING 2
FN: PROP10.OUT TSW

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 4010

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 10.00 Antecedent Moisture Condition = 2

2 year, 1 hour precipitation = 0.514(In.)
100 year, 1 hour precipitation = 1.620(In.)

Storm event year = 10.0
Calculated rainfall intensity data:
1 hour intensity = 0.969(In/Hr)
Slope of intensity duration curve = 0.5000

++
Process from Point/Station 100.000 to Point/Station 101.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 614.000(Ft.)
Top (of initial area) elevation = 1432.600(Ft.)
Bottom (of initial area) elevation = 1429.400(Ft.)
Difference in elevation = 3.200(Ft.)
Slope = 0.00521 s(percent)= 0.52
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 11.194 min.
Rainfall intensity = 2.243(In/Hr) for a 10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.881
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000

```
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      9.487(CFS)
Total initial stream area =        4.800(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      101.000 to Point/Station      102.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1425.400(Ft.)
Downstream point/station elevation =  1422.500(Ft.)
Pipe length  =   393.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =     9.487(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =     9.487(CFS)
Normal flow depth in pipe =   14.30(In.)
Flow top width inside pipe =   14.55(In.)
Critical Depth =   14.27(In.)
Pipe flow velocity =      6.30(Ft/s)
Travel time through pipe =    1.04 min.
Time of concentration (TC) =    12.23 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      102.000
**** SUBAREA FLOW ADDITION ****
________________________________________________________________________
COMMERCIAL subarea type
Runoff Coefficient = 0.880
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =    12.23 min.
Rainfall intensity =      2.146(In/Hr) for a    10.0 year storm
Subarea runoff =      5.668(CFS) for      3.000(Ac.)
Total runoff =     15.155(CFS)  Total area =       7.800(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      103.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1422.500(Ft.)
Downstream point/station elevation =  1421.100(Ft.)
Pipe length  =   185.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =    15.155(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =    15.155(CFS)
Normal flow depth in pipe =   17.51(In.)
Flow top width inside pipe =   15.64(In.)
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Critical Depth =   17.29(In.)
Pipe flow velocity =      7.07(Ft/s)
Travel time through pipe =    0.44 min.
Time of concentration (TC) =    12.67 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      103.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      7.800(Ac.)
Runoff from this stream =     15.155(CFS)
Time of concentration =   12.67 min.
Rainfall intensity =     2.109(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station     1030.000 to Point/Station     1031.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   294.000(Ft.)
Top (of initial area) elevation =  1430.700(Ft.)
Bottom (of initial area) elevation =  1428.300(Ft.)
Difference in elevation =     2.400(Ft.)
Slope =    0.00816  s(percent)=       0.82
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.622 min.
Rainfall intensity =      2.719(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.884
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      7.448(CFS)
Total initial stream area =        3.100(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station     1031.000 to Point/Station      103.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1424.300(Ft.)
Downstream point/station elevation =  1421.100(Ft.)
Pipe length  =   171.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =     7.448(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     7.448(CFS)
Normal flow depth in pipe =    9.95(In.)
Flow top width inside pipe =   14.18(In.)
Critical Depth =   13.04(In.)
Pipe flow velocity =      8.62(Ft/s)
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Travel time through pipe =    0.33 min.
Time of concentration (TC) =     7.95 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station     1031.000 to Point/Station      103.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      3.100(Ac.)
Runoff from this stream =      7.448(CFS)
Time of concentration =    7.95 min.
Rainfall intensity =     2.662(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       15.155     12.67                 2.109
2        7.448      7.95                 2.662
Largest stream flow has longer time of concentration
Qp =     15.155 + sum of
          Qb         Ia/Ib
           7.448 *    0.792 =      5.901
Qp =     21.056

Total of 2 streams to confluence:
Flow rates before confluence point:
      15.155       7.448
Area of streams before confluence:
        7.800        3.100
Results of confluence:
Total flow rate =     21.056(CFS)
Time of concentration =    12.669 min.
Effective stream area after confluence =     10.900(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.000 to Point/Station      104.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  1421.100(Ft.)
Downstream point/station elevation =  1420.000(Ft.)
Pipe length  =   161.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =    21.056(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    21.056(CFS)
Normal flow depth in pipe =   20.63(In.)
Flow top width inside pipe =   16.69(In.)
Critical Depth =   19.73(In.)
Pipe flow velocity =      7.32(Ft/s)
Travel time through pipe =    0.37 min.
Time of concentration (TC) =    13.04 min.
```

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++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.000 to Point/Station      104.000
**** CONFLUENCE OF MINOR STREAMS ****
_____________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =     10.900(Ac.)
Runoff from this stream =     21.056(CFS)
Time of concentration =   13.04 min.
Rainfall intensity =     2.079(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station     1040.000 to Point/Station     1041.000
**** INITIAL AREA EVALUATION ****
_____________________________________________________________________________
Initial area flow distance =   172.000(Ft.)
Top (of initial area) elevation =  1429.700(Ft.)
Bottom (of initial area) elevation =  1427.400(Ft.)
Difference in elevation =     2.300(Ft.)
Slope =    0.01337  s(percent)=       1.34
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.573 min.
Rainfall intensity =      3.180(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.886
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      1.690(CFS)
Total initial stream area =        0.600(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station     1041.000 to Point/Station      104.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
_____________________________________________________________________________
Upstream point/station elevation =  1423.400(Ft.)
Downstream point/station elevation =  1420.000(Ft.)
Pipe length  =    57.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =     1.690(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     1.690(CFS)
Normal flow depth in pipe =    3.88(In.)
Flow top width inside pipe =    8.91(In.)
Critical Depth =    7.16(In.)
Pipe flow velocity =      9.27(Ft/s)
Travel time through pipe =    0.10 min.
Time of concentration (TC) =     5.68 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station     1041.000 to Point/Station      104.000
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**** CONFLUENCE OF MINOR STREAMS ****
____________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.600(Ac.)
Runoff from this stream =      1.690(CFS)
Time of concentration =    5.68 min.
Rainfall intensity =     3.151(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      200.000 to Point/Station      201.000
**** INITIAL AREA EVALUATION ****
____________________________________________________________________
Initial area flow distance =   931.000(Ft.)
Top (of initial area) elevation =  1432.600(Ft.)
Bottom (of initial area) elevation =  1429.300(Ft.)
Difference in elevation =     3.300(Ft.)
Slope =    0.00354  s(percent)=       0.35
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   14.282 min.
Rainfall intensity =      1.986(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.879
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      6.461(CFS)
Total initial stream area =        3.700(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      201.000 to Point/Station      202.000
**** STREET INLET + AREA  + PIPE  TRAVEL TIME ****
____________________________________________________________________
Top of street segment elevation =  1429.300(Ft.)
End of street segment elevation =  1426.500(Ft.)
Length of street segment  =   545.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  26.000(Ft.)
Distance from crown to crossfall grade break  =  24.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.050
Slope from grade break to crown (v/hz)  =   0.013
Street flow is on [1] side(s) of the street
Distance from curb to property line  =   6.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  1.500(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
No street inlet installed at this point
Estimated mean flow rate at midpoint of street =      8.403(CFS)
```

```
Depth of flow =   0.418(Ft.), Average velocity =   2.098(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  24.514(Ft.)
Flow velocity =   2.10(Ft/s)
Travel time =    4.33 min.     TC =   18.61  min.
 Adding area flow to street
COMMERCIAL subarea type
Runoff Coefficient = 0.877
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      1.740(In/Hr) for a    10.0 year storm
Subarea runoff =      3.814(CFS) for      2.500(Ac.)
Total runoff =     10.275(CFS)  Total area =       6.200(Ac.)
Street flow at end of street =     10.275(CFS)
Half street flow at end of street =     10.275(CFS)
Depth of flow =   0.442(Ft.), Average velocity =   2.221(Ft/s)
Note:  depth of flow exceeds top of street crown.
Flow width (from curb towards crown)=  26.000(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      202.000 to Point/Station      203.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1422.000(Ft.)
Downstream point/station elevation =  1420.800(Ft.)
Pipe length  =   223.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =    10.275(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =    10.275(CFS)
Normal flow depth in pipe =   14.41(In.)
Flow top width inside pipe =   19.49(In.)
Critical Depth =   14.32(In.)
Pipe flow velocity =      5.84(Ft/s)
Travel time through pipe =    0.64 min.
Time of concentration (TC) =    19.25 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      203.000 to Point/Station      203.000
**** SUBAREA FLOW ADDITION ****
________________________________________________________________________
COMMERCIAL subarea type
Runoff Coefficient = 0.877
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =    19.25 min.
Rainfall intensity =      1.711(In/Hr) for a    10.0 year storm
```

```
Subarea runoff =      2.250(CFS) for      1.500(Ac.)
Total runoff =     12.525(CFS)  Total area =       7.700(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      203.000 to Point/Station      104.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1420.800(Ft.)
Downstream point/station elevation =  1420.000(Ft.)
Pipe length  =   133.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =    12.525(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =    12.525(CFS)
Normal flow depth in pipe =   16.20(In.)
Flow top width inside pipe =   17.64(In.)
Critical Depth =   15.83(In.)
Pipe flow velocity =      6.29(Ft/s)
Travel time through pipe =    0.35 min.
Time of concentration (TC) =    19.60 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      203.000 to Point/Station      104.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 3
Stream flow area =      7.700(Ac.)
Runoff from this stream =     12.525(CFS)
Time of concentration =   19.60 min.
Rainfall intensity =     1.695(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1       21.056     13.04                 2.079
2        1.690      5.68                 3.151
3       12.525     19.60                 1.695
Largest stream flow has longer or shorter time of concentration
Qp =     21.056 + sum of
          Qb         Ia/Ib
           1.690 *    0.660 =      1.115
          Qa          Tb/Ta
          12.525 *    0.665 =      8.330
Qp =     30.501

Total of 3 streams to confluence:
Flow rates before confluence point:
      21.056       1.690      12.525
Area of streams before confluence:
       10.900        0.600        7.700
Results of confluence:
Total flow rate =     30.501(CFS)
Time of concentration =    13.036 min.
```

```
Effective stream area after confluence =     19.200(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      104.000 to Point/Station      105.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1420.000(Ft.)
Downstream point/station elevation =  1419.900(Ft.)
Pipe length  =    15.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =    30.501(CFS)
Nearest computed pipe diameter  =     30.00(In.)
Calculated individual pipe flow  =    30.501(CFS)
Normal flow depth in pipe =   21.07(In.)
Flow top width inside pipe =   27.43(In.)
Critical Depth =   22.57(In.)
Pipe flow velocity =      8.28(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =    13.07 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      104.000 to Point/Station      105.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =     19.200(Ac.)
Runoff from this stream =     30.501(CFS)
Time of concentration =   13.07 min.
Rainfall intensity =     2.077(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      300.000 to Point/Station      301.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   216.000(Ft.)
Top (of initial area) elevation =  1430.200(Ft.)
Bottom (of initial area) elevation =  1420.200(Ft.)
Difference in elevation =    10.000(Ft.)
Slope =    0.04630  s(percent)=       4.63
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Warning: TC computed to be less than 5 min.; program is assuming the
time of concentration is 5 minutes.
Initial area time of concentration =    5.000 min.
Rainfall intensity =      3.357(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.886
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      2.678(CFS)
Total initial stream area =        0.900(Ac.)
```

```
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      301.000 to Point/Station      105.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1420.000(Ft.)
Downstream point/station elevation =  1419.900(Ft.)
Pipe length  =   170.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =     2.678(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =     2.678(CFS)
Normal flow depth in pipe =   14.30(In.)
Flow top width inside pipe =   14.55(In.)
Critical Depth =    7.44(In.)
Pipe flow velocity =      1.78(Ft/s)
Travel time through pipe =    1.59 min.
Time of concentration (TC) =     6.59 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      301.000 to Point/Station      105.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.900(Ac.)
Runoff from this stream =      2.678(CFS)
Time of concentration =    6.59 min.
Rainfall intensity =     2.923(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1       30.501     13.07                 2.077
2        2.678      6.59                 2.923
Largest stream flow has longer time of concentration
Qp =     30.501 + sum of
          Qb         Ia/Ib
           2.678 *    0.710 =      1.902
Qp =     32.403

Total of 2 streams to confluence:
Flow rates before confluence point:
      30.501       2.678
Area of streams before confluence:
       19.200        0.900
Results of confluence:
Total flow rate =     32.403(CFS)
Time of concentration =    13.066 min.
Effective stream area after confluence =     20.100(Ac.)
End of computations, total study area =           20.10 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
```

```
Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  69.0
```

100-YEAR ONSITE HYDROLOGY (RATIONAL METHOD)

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0
Rational Hydrology Study Date: 05/03/21 File:PROP100.out

21-0026 - MENIFEE COMMERCE CENTER
ONSITE RATIONAL METHOD HYDROLOGY
100 YEAR STORM EVENT - BUILDING 1
FN: PROP100.OUT TSW

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

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Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 100.00 Antecedent Moisture Condition = 2

2 year, 1 hour precipitation = 0.514(In.)
100 year, 1 hour precipitation = 1.620(In.)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.620(In/Hr)
Slope of intensity duration curve = 0.5000

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Process from Point/Station 100.000 to Point/Station 101.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 867.000(Ft.)
Top (of initial area) elevation = 1437.000(Ft.)
Bottom (of initial area) elevation = 1432.500(Ft.)
Difference in elevation = 4.500(Ft.)
Slope = 0.00519 s(percent)= 0.52
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 12.861 min.
Rainfall intensity = 3.499(In/Hr) for a 100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.887
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000

```
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =     18.308(CFS)
Total initial stream area =        5.900(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      101.000 to Point/Station      102.000
**** IMPROVED CHANNEL TRAVEL TIME ****
________________________________________________________________________
Covered channel
Upstream point elevation =  1429.800(Ft.)
Downstream point elevation =  1428.700(Ft.)
Channel length thru subarea  =   448.000(Ft.)
Channel base width      =    2.000(Ft.)
Slope or 'Z' of left channel bank =   0.000
Slope or 'Z' of right channel bank =   0.000
Estimated mean flow rate at midpoint of channel =     30.837(CFS)
Manning's 'N'    = 0.012
Maximum depth of channel  =    4.000(Ft.)
Flow(q) thru subarea =     30.837(CFS)
Depth of flow =   3.037(Ft.), Average velocity =   5.076(Ft/s)
Channel flow top width =    2.000(Ft.)
Flow Velocity =    5.08(Ft/s)
Travel time  =    1.47 min.
Time of concentration =   14.33 min.

Sub-Channel No. 1 Critical depth =      1.938(Ft.)
  '     '       '     Critical flow top width =      2.000(Ft.)
  '     '       '     Critical flow velocity=    7.958(Ft/s)
  '     '       '     Critical flow area =      3.875(Sq.Ft)

 Adding area flow to channel
COMMERCIAL subarea type
Runoff Coefficient = 0.886
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      3.315(In/Hr) for a   100.0 year storm
Subarea runoff =     24.969(CFS) for      8.500(Ac.)
Total runoff =     43.277(CFS)  Total area =      14.400(Ac.)

Sub-Channel No. 1 Critical depth =      2.406(Ft.)
  '     '       '     Critical flow top width =      2.000(Ft.)
  '     '       '     Critical flow velocity=    8.791(Ft/s)
  '     '       '     Critical flow area =      4.813(Sq.Ft)



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Process from Point/Station      102.000 to Point/Station      103.000
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**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
_____________________________________________________________________
Upstream point/station elevation =  1428.700(Ft.)
Downstream point/station elevation =  1427.600(Ft.)
Pipe length  =   440.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =    43.277(CFS)
Nearest computed pipe diameter  =     39.00(In.)
Calculated individual pipe flow  =    43.277(CFS)
Normal flow depth in pipe =   30.89(In.)
Flow top width inside pipe =   31.65(In.)
Critical Depth =   25.14(In.)
Pipe flow velocity =      6.14(Ft/s)
Travel time through pipe =    1.19 min.
Time of concentration (TC) =    15.53 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.000 to Point/Station      103.000
**** SUBAREA FLOW ADDITION ****
_____________________________________________________________________
COMMERCIAL subarea type
Runoff Coefficient = 0.886
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =    15.53 min.
Rainfall intensity =      3.185(In/Hr) for a   100.0 year storm
Subarea runoff =     24.823(CFS) for      8.800(Ac.)
Total runoff =     68.099(CFS)  Total area =      23.200(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.000 to Point/Station      104.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
_____________________________________________________________________
Upstream point/station elevation =  1427.600(Ft.)
Downstream point/station elevation =  1423.900(Ft.)
Pipe length  =  1480.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =    68.099(CFS)
Nearest computed pipe diameter  =     45.00(In.)
Calculated individual pipe flow  =    68.099(CFS)
Normal flow depth in pipe =   38.72(In.)
Flow top width inside pipe =   31.19(In.)
Critical Depth =   30.48(In.)
Pipe flow velocity =      6.74(Ft/s)
Travel time through pipe =    3.66 min.
Time of concentration (TC) =    19.19 min.


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Process from Point/Station      103.000 to Point/Station      104.000
**** CONFLUENCE OF MAIN STREAMS ****
_____________________________________________________________________
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The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     23.200(Ac.)
Runoff from this stream =     68.099(CFS)
Time of concentration =   19.19 min.
Rainfall intensity =     2.865(In/Hr)
Program is now starting with Main Stream No. 2


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Process from Point/Station      200.000 to Point/Station      201.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   909.000(Ft.)
Top (of initial area) elevation =  1437.000(Ft.)
Bottom (of initial area) elevation =  1431.000(Ft.)
Difference in elevation =     6.000(Ft.)
Slope =    0.00660  s(percent)=       0.66
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   12.492 min.
Rainfall intensity =      3.550(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.887
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =     28.343(CFS)
Total initial stream area =        9.000(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      201.000 to Point/Station      500.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1426.000(Ft.)
Downstream point/station elevation =  1425.100(Ft.)
Pipe length  =    37.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =    28.343(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    28.343(CFS)
Normal flow depth in pipe =   15.39(In.)
Flow top width inside pipe =   23.02(In.)
Critical Depth =   22.01(In.)
Pipe flow velocity =     13.32(Ft/s)
Travel time through pipe =    0.05 min.
Time of concentration (TC) =    12.54 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      201.000 to Point/Station      500.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
```

```
Along Main Stream number: 2 in normal stream number 1
Stream flow area =      9.000(Ac.)
Runoff from this stream =     28.343(CFS)
Time of concentration =   12.54 min.
Rainfall intensity =     3.544(In/Hr)


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Process from Point/Station      300.000 to Point/Station      301.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   695.000(Ft.)
Top (of initial area) elevation =  1439.000(Ft.)
Bottom (of initial area) elevation =  1431.000(Ft.)
Difference in elevation =     8.000(Ft.)
Slope =    0.01151  s(percent)=       1.15
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.039 min.
Rainfall intensity =      3.960(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.888
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =     20.754(CFS)
Total initial stream area =        5.900(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      301.000 to Point/Station      500.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1426.000(Ft.)
Downstream point/station elevation =  1424.700(Ft.)
Pipe length  =    37.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =    20.754(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =    20.754(CFS)
Normal flow depth in pipe =   14.34(In.)
Flow top width inside pipe =   14.48(In.)
Critical depth could not be calculated.
Pipe flow velocity =     13.76(Ft/s)
Travel time through pipe =    0.04 min.
Time of concentration (TC) =    10.08 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      301.000 to Point/Station      500.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 2 in normal stream number 2
Stream flow area =      5.900(Ac.)
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Runoff from this stream =     20.754(CFS)
Time of concentration =   10.08 min.
Rainfall intensity =     3.952(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      400.000 to Point/Station      401.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   697.000(Ft.)
Top (of initial area) elevation =  1437.600(Ft.)
Bottom (of initial area) elevation =  1433.000(Ft.)
Difference in elevation =     4.600(Ft.)
Slope =    0.00660  s(percent)=       0.66
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   11.233 min.
Rainfall intensity =      3.744(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.888
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =     14.289(CFS)
Total initial stream area =        4.300(Ac.)
Pervious area fraction = 0.100


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Process from Point/Station      401.000 to Point/Station      402.000
**** IMPROVED CHANNEL TRAVEL TIME ****
________________________________________________________________________
Upstream point elevation =  1433.000(Ft.)
Downstream point elevation =  1431.000(Ft.)
Channel length thru subarea  =   352.000(Ft.)
Channel base width      =    0.000(Ft.)
Slope or 'Z' of left channel bank =  61.000
Slope or 'Z' of right channel bank =  65.000
Estimated mean flow rate at midpoint of channel =     24.748(CFS)
Manning's 'N'    = 0.015
Maximum depth of channel  =    2.000(Ft.)
Flow(q) thru subarea =     24.748(CFS)
Depth of flow =   0.394(Ft.), Average velocity =   2.529(Ft/s)
Channel flow top width =   49.663(Ft.)
Flow Velocity =    2.53(Ft/s)
Travel time  =    2.32 min.
Time of concentration =   13.55 min.

Sub-Channel No. 1 Critical depth =      0.395(Ft.)
  '     '       '     Critical flow top width =     49.711(Ft.)
  '     '       '     Critical flow velocity=    2.524(Ft/s)
  '     '       '     Critical flow area =      9.806(Sq.Ft)

 Adding area flow to channel
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COMMERCIAL subarea type
Runoff Coefficient = 0.887
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      3.409(In/Hr) for a   100.0 year storm
Subarea runoff =     20.851(CFS) for      6.900(Ac.)
Total runoff =     35.140(CFS)  Total area =      11.200(Ac.)
Depth of flow =   0.450(Ft.), Average velocity =   2.760(Ft/s)

Sub-Channel No. 1 Critical depth =      0.453(Ft.)
  '     '       '     Critical flow top width =     57.094(Ft.)
  '     '       '     Critical flow velocity=    2.717(Ft/s)
  '     '       '     Critical flow area =     12.935(Sq.Ft)



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Process from Point/Station      402.000 to Point/Station      500.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1426.000(Ft.)
Downstream point/station elevation =  1424.300(Ft.)
Pipe length  =    37.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =    35.140(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =    35.140(CFS)
Normal flow depth in pipe =   16.41(In.)
Flow top width inside pipe =   17.36(In.)
Critical depth could not be calculated.
Pipe flow velocity =     17.41(Ft/s)
Travel time through pipe =    0.04 min.
Time of concentration (TC) =    13.59 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      402.000 to Point/Station      500.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 2 in normal stream number 3
Stream flow area =     11.200(Ac.)
Runoff from this stream =     35.140(CFS)
Time of concentration =   13.59 min.
Rainfall intensity =     3.404(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1       28.343     12.54                3.544
2       20.754     10.08                3.952
3       35.140     13.59                3.404
```

```
Largest stream flow has longer time of concentration
Qp =     35.140 + sum of
          Qb         Ia/Ib
          28.343 *    0.961 =     27.225
          Qb         Ia/Ib
          20.754 *    0.861 =     17.878
Qp =     80.243

Total of 3 streams to confluence:
Flow rates before confluence point:
      28.343      20.754      35.140
Area of streams before confluence:
        9.000        5.900       11.200
Results of confluence:
Total flow rate =     80.243(CFS)
Time of concentration =    13.589 min.
Effective stream area after confluence =     26.100(Ac.)


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Process from Point/Station      500.000 to Point/Station      500.000
**** SUBAREA FLOW ADDITION ****
________________________________________________________________________
COMMERCIAL subarea type
Runoff Coefficient = 0.887
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =    13.59 min.
Rainfall intensity =      3.404(In/Hr) for a   100.0 year storm
Subarea runoff =      3.320(CFS) for      1.100(Ac.)
Total runoff =     83.563(CFS)  Total area =      27.200(Ac.)


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Process from Point/Station      500.000 to Point/Station      104.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1424.000(Ft.)
Downstream point/station elevation =  1423.900(Ft.)
Pipe length  =    72.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =    83.563(CFS)
Nearest computed pipe diameter  =     54.00(In.)
Calculated individual pipe flow  =    83.563(CFS)
Normal flow depth in pipe =   47.44(In.)
Flow top width inside pipe =   35.29(In.)
Critical Depth =   32.10(In.)
Pipe flow velocity =      5.65(Ft/s)
Travel time through pipe =    0.21 min.
Time of concentration (TC) =    13.80 min.


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Process from Point/Station      500.000 to Point/Station      104.000
**** CONFLUENCE OF MAIN STREAMS ****
--------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =     27.200(Ac.)
Runoff from this stream =     83.563(CFS)
Time of concentration =   13.80 min.
Rainfall intensity =     3.378(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1       68.099     19.19                 2.865
2       83.563     13.80                 3.378
Largest stream flow has longer or shorter time of concentration
Qp =     83.563 + sum of
          Qa          Tb/Ta
          68.099 *    0.719 =     48.980
Qp =    132.543

Total of 2 main streams to confluence:
Flow rates before confluence point:
      68.099      83.563
Area of streams before confluence:
       23.200       27.200


Results of confluence:
Total flow rate =    132.543(CFS)
Time of concentration =    13.801 min.
Effective stream area after confluence  =     50.400(Ac.)
End of computations, total study area =           50.40 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  69.0
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Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0
Rational Hydrology Study Date: 08/06/21 File:PROP100.out

21-0026 - MENIFEE COMMERCE CENTER
ONSITE RATIONAL METHOD HYDROLOGY
100 YEAR STORM EVENT - BUILDING 2
FN: PROP100.OUT TSW

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 4010

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 100.00 Antecedent Moisture Condition = 2

2 year, 1 hour precipitation = 0.514(In.)
100 year, 1 hour precipitation = 1.620(In.)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.620(In/Hr)
Slope of intensity duration curve = 0.5000

++
Process from Point/Station 100.000 to Point/Station 101.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 614.000(Ft.)
Top (of initial area) elevation = 1432.600(Ft.)
Bottom (of initial area) elevation = 1429.400(Ft.)
Difference in elevation = 3.200(Ft.)
Slope = 0.00521 s(percent)= 0.52
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 11.194 min.
Rainfall intensity = 3.751(In/Hr) for a 100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.888
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000

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Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =     15.979(CFS)
Total initial stream area =        4.800(Ac.)
Pervious area fraction = 0.100


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Process from Point/Station      101.000 to Point/Station      102.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1425.400(Ft.)
Downstream point/station elevation =  1422.500(Ft.)
Pipe length  =   393.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =    15.979(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    15.979(CFS)
Normal flow depth in pipe =   15.63(In.)
Flow top width inside pipe =   22.87(In.)
Critical Depth =   17.31(In.)
Pipe flow velocity =      7.37(Ft/s)
Travel time through pipe =    0.89 min.
Time of concentration (TC) =    12.08 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      102.000
**** SUBAREA FLOW ADDITION ****
________________________________________________________________________
COMMERCIAL subarea type
Runoff Coefficient = 0.887
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =    12.08 min.
Rainfall intensity =      3.610(In/Hr) for a   100.0 year storm
Subarea runoff =      9.608(CFS) for      3.000(Ac.)
Total runoff =     25.587(CFS)  Total area =       7.800(Ac.)


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Process from Point/Station      102.000 to Point/Station      103.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1422.500(Ft.)
Downstream point/station elevation =  1421.100(Ft.)
Pipe length  =   185.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =    25.587(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    25.587(CFS)
Normal flow depth in pipe =   19.59(In.)
Flow top width inside pipe =   24.09(In.)
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Critical Depth =   21.20(In.)
Pipe flow velocity =      8.28(Ft/s)
Travel time through pipe =    0.37 min.
Time of concentration (TC) =    12.46 min.


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Process from Point/Station      102.000 to Point/Station      103.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      7.800(Ac.)
Runoff from this stream =     25.587(CFS)
Time of concentration =   12.46 min.
Rainfall intensity =     3.556(In/Hr)


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Process from Point/Station     1030.000 to Point/Station     1031.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   294.000(Ft.)
Top (of initial area) elevation =  1430.700(Ft.)
Bottom (of initial area) elevation =  1428.300(Ft.)
Difference in elevation =     2.400(Ft.)
Slope =    0.00816  s(percent)=       0.82
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.622 min.
Rainfall intensity =      4.545(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.890
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =     12.533(CFS)
Total initial stream area =        3.100(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station     1031.000 to Point/Station      103.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1424.300(Ft.)
Downstream point/station elevation =  1421.100(Ft.)
Pipe length  =   171.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =    12.533(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =    12.533(CFS)
Normal flow depth in pipe =   12.23(In.)
Flow top width inside pipe =   16.80(In.)
Critical Depth =   16.02(In.)
Pipe flow velocity =      9.80(Ft/s)
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Travel time through pipe =    0.29 min.
Time of concentration (TC) =     7.91 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station     1031.000 to Point/Station      103.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      3.100(Ac.)
Runoff from this stream =     12.533(CFS)
Time of concentration =    7.91 min.
Rainfall intensity =     4.461(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       25.587     12.46                 3.556
2       12.533      7.91                 4.461
Largest stream flow has longer time of concentration
Qp =     25.587 + sum of
          Qb         Ia/Ib
          12.533 *    0.797 =      9.990
Qp =     35.577

Total of 2 streams to confluence:
Flow rates before confluence point:
      25.587      12.533
Area of streams before confluence:
        7.800        3.100
Results of confluence:
Total flow rate =     35.577(CFS)
Time of concentration =    12.455 min.
Effective stream area after confluence =     10.900(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.000 to Point/Station      104.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  1421.100(Ft.)
Downstream point/station elevation =  1420.000(Ft.)
Pipe length  =   161.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =    35.577(CFS)
Nearest computed pipe diameter  =     30.00(In.)
Calculated individual pipe flow  =    35.577(CFS)
Normal flow depth in pipe =   23.77(In.)
Flow top width inside pipe =   24.34(In.)
Critical Depth =   24.30(In.)
Pipe flow velocity =      8.52(Ft/s)
Travel time through pipe =    0.31 min.
Time of concentration (TC) =    12.77 min.
```

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++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.000 to Point/Station      104.000
**** CONFLUENCE OF MINOR STREAMS ****
_____________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =     10.900(Ac.)
Runoff from this stream =     35.577(CFS)
Time of concentration =   12.77 min.
Rainfall intensity =     3.512(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station     1040.000 to Point/Station     1041.000
**** INITIAL AREA EVALUATION ****
_____________________________________________________________________________
Initial area flow distance =   172.000(Ft.)
Top (of initial area) elevation =  1429.700(Ft.)
Bottom (of initial area) elevation =  1427.400(Ft.)
Difference in elevation =     2.300(Ft.)
Slope =    0.01337  s(percent)=       1.34
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.573 min.
Rainfall intensity =      5.316(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.891
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      2.841(CFS)
Total initial stream area =        0.600(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station     1041.000 to Point/Station      104.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
_____________________________________________________________________________
Upstream point/station elevation =  1423.400(Ft.)
Downstream point/station elevation =  1420.000(Ft.)
Pipe length  =    57.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =     2.841(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     2.841(CFS)
Normal flow depth in pipe =    5.28(In.)
Flow top width inside pipe =    8.86(In.)
Critical depth could not be calculated.
Pipe flow velocity =     10.54(Ft/s)
Travel time through pipe =    0.09 min.
Time of concentration (TC) =     5.66 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station     1041.000 to Point/Station      104.000
```

```
**** CONFLUENCE OF MINOR STREAMS ****
____________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.600(Ac.)
Runoff from this stream =      2.841(CFS)
Time of concentration =    5.66 min.
Rainfall intensity =     5.273(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      200.000 to Point/Station      201.000
**** INITIAL AREA EVALUATION ****
____________________________________________________________________
Initial area flow distance =   931.000(Ft.)
Top (of initial area) elevation =  1432.600(Ft.)
Bottom (of initial area) elevation =  1429.300(Ft.)
Difference in elevation =     3.300(Ft.)
Slope =    0.00354  s(percent)=       0.35
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   14.282 min.
Rainfall intensity =      3.320(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.886
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =     10.888(CFS)
Total initial stream area =        3.700(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      201.000 to Point/Station      202.000
**** STREET INLET + AREA  + PIPE  TRAVEL TIME ****
____________________________________________________________________
Top of street segment elevation =  1429.300(Ft.)
End of street segment elevation =  1426.500(Ft.)
Length of street segment  =   545.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  26.000(Ft.)
Distance from crown to crossfall grade break  =  24.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.050
Slope from grade break to crown (v/hz)  =   0.013
Street flow is on [1] side(s) of the street
Distance from curb to property line  =   6.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  1.500(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
No street inlet installed at this point
Estimated mean flow rate at midpoint of street =     14.196(CFS)
```

```
Depth of flow =   0.480(Ft.), Average velocity =   2.526(Ft/s)
Note:  depth of flow exceeds top of street crown.
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  26.000(Ft.)
Flow velocity =   2.53(Ft/s)
Travel time =    3.60 min.     TC =   17.88  min.
 Adding area flow to street
COMMERCIAL subarea type
Runoff Coefficient = 0.885
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      2.968(In/Hr) for a   100.0 year storm
Subarea runoff =      6.565(CFS) for      2.500(Ac.)
Total runoff =     17.453(CFS)  Total area =       6.200(Ac.)
Street flow at end of street =     17.453(CFS)
Half street flow at end of street =     17.453(CFS)
Depth of flow =   0.511(Ft.), Average velocity =   2.721(Ft/s)
Warning: depth of flow exceeds top of curb
Note:  depth of flow exceeds top of street crown.
Distance that curb overflow reaches into property =    0.54(Ft.)
Flow width (from curb towards crown)=  26.000(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      202.000 to Point/Station      203.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1422.000(Ft.)
Downstream point/station elevation =  1420.800(Ft.)
Pipe length  =   223.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =    17.453(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    17.453(CFS)
Normal flow depth in pipe =   19.08(In.)
Flow top width inside pipe =   19.38(In.)
Critical Depth =   18.06(In.)
Pipe flow velocity =      6.52(Ft/s)
Travel time through pipe =    0.57 min.
Time of concentration (TC) =    18.45 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      203.000 to Point/Station      203.000
**** SUBAREA FLOW ADDITION ****
________________________________________________________________________
COMMERCIAL subarea type
Runoff Coefficient = 0.885
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
```

```
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =    18.45 min.
Rainfall intensity =      2.922(In/Hr) for a   100.0 year storm
Subarea runoff =      3.877(CFS) for      1.500(Ac.)
Total runoff =     21.331(CFS)  Total area =       7.700(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      203.000 to Point/Station      104.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1420.800(Ft.)
Downstream point/station elevation =  1420.000(Ft.)
Pipe length  =   133.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =    21.331(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    21.331(CFS)
Normal flow depth in pipe =   18.61(In.)
Flow top width inside pipe =   24.99(In.)
Critical Depth =   19.39(In.)
Pipe flow velocity =      7.30(Ft/s)
Travel time through pipe =    0.30 min.
Time of concentration (TC) =    18.75 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      203.000 to Point/Station      104.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 3
Stream flow area =      7.700(Ac.)
Runoff from this stream =     21.331(CFS)
Time of concentration =   18.75 min.
Rainfall intensity =     2.898(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1       35.577     12.77                3.512
2        2.841      5.66                5.273
3       21.331     18.75                2.898
Largest stream flow has longer or shorter time of concentration
Qp =     35.577 + sum of
          Qb         Ia/Ib
           2.841 *    0.666 =      1.892
          Qa          Tb/Ta
          21.331 *    0.681 =     14.527
Qp =     51.996

Total of 3 streams to confluence:
Flow rates before confluence point:
      35.577       2.841      21.331
Area of streams before confluence:
       10.900        0.600        7.700
```

```
Results of confluence:
Total flow rate =     51.996(CFS)
Time of concentration =    12.770 min.
Effective stream area after confluence =     19.200(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      104.000 to Point/Station      105.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1420.000(Ft.)
Downstream point/station elevation =  1419.900(Ft.)
Pipe length  =    15.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =    51.996(CFS)
Nearest computed pipe diameter  =     36.00(In.)
Calculated individual pipe flow  =    51.996(CFS)
Normal flow depth in pipe =   26.25(In.)
Flow top width inside pipe =   32.00(In.)
Critical Depth =   28.15(In.)
Pipe flow velocity =      9.42(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =    12.80 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      104.000 to Point/Station      105.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =     19.200(Ac.)
Runoff from this stream =     51.996(CFS)
Time of concentration =   12.80 min.
Rainfall intensity =     3.508(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      300.000 to Point/Station      301.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   216.000(Ft.)
Top (of initial area) elevation =  1430.200(Ft.)
Bottom (of initial area) elevation =  1420.200(Ft.)
Difference in elevation =    10.000(Ft.)
Slope =    0.04630  s(percent)=       4.63
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Warning: TC computed to be less than 5 min.; program is assuming the
time of concentration is 5 minutes.
Initial area time of concentration =    5.000 min.
Rainfall intensity =      5.612(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.891
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
```

```
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      4.502(CFS)
Total initial stream area =        0.900(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      301.000 to Point/Station      105.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1420.000(Ft.)
Downstream point/station elevation =  1419.900(Ft.)
Pipe length  =   170.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =     4.502(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =     4.502(CFS)
Normal flow depth in pipe =   15.61(In.)
Flow top width inside pipe =   22.89(In.)
Critical Depth =    8.94(In.)
Pipe flow velocity =      2.08(Ft/s)
Travel time through pipe =    1.36 min.
Time of concentration (TC) =     6.36 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      301.000 to Point/Station      105.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.900(Ac.)
Runoff from this stream =      4.502(CFS)
Time of concentration =    6.36 min.
Rainfall intensity =     4.975(In/Hr)
Summary of stream data:

Stream   Flow rate      TC             Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       51.996     12.80                 3.508
2        4.502      6.36                 4.975
Largest stream flow has longer time of concentration
Qp =     51.996 + sum of
          Qb         Ia/Ib
           4.502 *    0.705 =      3.174
Qp =     55.170

Total of 2 streams to confluence:
Flow rates before confluence point:
      51.996       4.502
Area of streams before confluence:
       19.200        0.900
Results of confluence:
Total flow rate =     55.170(CFS)
Time of concentration =    12.797 min.
Effective stream area after confluence =     20.100(Ac.)
```

End of computations, total study area = 20.10 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number = 69.0

EXISTING CONDITION 2-YEAR, 24 HOUR UNIT HYDROGRAPHS

U n i t H y d r o g r a p h A n a l y s i s

Study date 05/03/21 File: ONSITEPRE242.out

++

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 4010

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

21-0026 - MENIFEE COMMERCE CENTER
ONSITE UNIT HYDROGRAPH ANALYSIS
EXISITNG CONDITION, 2-YEAR 24-HOUR: BUILDING 1
FN: ONSITEPRE242.OUT- TSW

Drainage Area = 50.40(Ac.) = 0.079 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 50.40(Ac.) = 0.079 Sq. Mi.
Length along longest watercourse = 1398.00(Ft.)
Length along longest watercourse measured to centroid = 690.00(Ft.)
Length along longest watercourse = 0.265 Mi.
Length along longest watercourse measured to centroid = 0.131 Mi.
Difference in elevation = 5.60(Ft.)
Slope along watercourse = 21.1502 Ft./Mi.
Average Manning's 'N' = 0.030
Lag time = 0.112 Hr.
Lag time = 6.74 Min.
25% of lag time = 1.68 Min.
40% of lag time = 2.70 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
50.40	2.04	102.82

100 YEAR Area rainfall data:

```
Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       50.40            5.33                 268.63

STORM EVENT (YEAR) =    2.00
Area Averaged 2-Year Rainfall =    2.040(In)
Area Averaged 100-Year Rainfall =    5.330(In)

Point rain (area averaged) =    2.040(In)
Areal adjustment factor =   99.99 %
Adjusted average point rain =    2.040(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
    50.400           86.00         0.000
 Total Area Entered =     50.40(Ac.)


RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
AMC2 AMC-1     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
86.0  71.6      0.343     0.000        0.343       1.000      0.343
                                                 Sum (F) =   0.343
Area averaged mean soil loss (F) (In/Hr) =  0.200
Minimum soil loss rate ((In/Hr)) =  0.100
(for 24 hour storm duration)
Note: User entry of the fm value
Note: User entry of the f value
Soil low loss rate (decimal) =   0.900
------------------------------------------------------------------------

               U n i t  H y d r o g r a p h
                      VALLEY S-Curve
------------------------------------------------------------------------
               Unit Hydrograph Data
------------------------------------------------------------------------
Unit time period   Time % of lag   Distribution   Unit Hydrograph
    (hrs)                          Graph %            (CFS)
------------------------------------------------------------------------
    1   0.083         74.207         11.722              5.954
    2   0.167        148.413         42.134             21.402
    3   0.250        222.620         21.730             11.037
    4   0.333        296.826          8.657              4.397
    5   0.417        371.033          5.244              2.664
    6   0.500        445.240          3.405              1.730
    7   0.583        519.446          2.357              1.197
    8   0.667        593.653          1.743              0.885
    9   0.750        667.859          1.228              0.624
   10   0.833        742.066          0.829              0.421
   11   0.917        816.272          0.950              0.483
                               Sum = 100.000   Sum=      50.794
------------------------------------------------------------------------

 The following loss rate calculations reflect use of the minimum calculated loss
 rate subtracted from the Storm Rain to produce the maximum Effective Rain value
```

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.016	(0.355)	0.015	0.002
2	0.17	0.07	0.016	(0.353)	0.015	0.002
3	0.25	0.07	0.016	(0.352)	0.015	0.002
4	0.33	0.10	0.024	(0.350)	0.022	0.002
5	0.42	0.10	0.024	(0.349)	0.022	0.002
6	0.50	0.10	0.024	(0.348)	0.022	0.002
7	0.58	0.10	0.024	(0.346)	0.022	0.002
8	0.67	0.10	0.024	(0.345)	0.022	0.002
9	0.75	0.10	0.024	(0.344)	0.022	0.002
10	0.83	0.13	0.033	(0.342)	0.029	0.003
11	0.92	0.13	0.033	(0.341)	0.029	0.003
12	1.00	0.13	0.033	(0.340)	0.029	0.003
13	1.08	0.10	0.024	(0.338)	0.022	0.002
14	1.17	0.10	0.024	(0.337)	0.022	0.002
15	1.25	0.10	0.024	(0.336)	0.022	0.002
16	1.33	0.10	0.024	(0.334)	0.022	0.002
17	1.42	0.10	0.024	(0.333)	0.022	0.002
18	1.50	0.10	0.024	(0.332)	0.022	0.002
19	1.58	0.10	0.024	(0.330)	0.022	0.002
20	1.67	0.10	0.024	(0.329)	0.022	0.002
21	1.75	0.10	0.024	(0.328)	0.022	0.002
22	1.83	0.13	0.033	(0.326)	0.029	0.003
23	1.92	0.13	0.033	(0.325)	0.029	0.003
24	2.00	0.13	0.033	(0.324)	0.029	0.003
25	2.08	0.13	0.033	(0.322)	0.029	0.003
26	2.17	0.13	0.033	(0.321)	0.029	0.003
27	2.25	0.13	0.033	(0.320)	0.029	0.003
28	2.33	0.13	0.033	(0.318)	0.029	0.003
29	2.42	0.13	0.033	(0.317)	0.029	0.003
30	2.50	0.13	0.033	(0.316)	0.029	0.003
31	2.58	0.17	0.041	(0.315)	0.037	0.004
32	2.67	0.17	0.041	(0.313)	0.037	0.004
33	2.75	0.17	0.041	(0.312)	0.037	0.004
34	2.83	0.17	0.041	(0.311)	0.037	0.004
35	2.92	0.17	0.041	(0.309)	0.037	0.004
36	3.00	0.17	0.041	(0.308)	0.037	0.004
37	3.08	0.17	0.041	(0.307)	0.037	0.004
38	3.17	0.17	0.041	(0.306)	0.037	0.004
39	3.25	0.17	0.041	(0.304)	0.037	0.004
40	3.33	0.17	0.041	(0.303)	0.037	0.004
41	3.42	0.17	0.041	(0.302)	0.037	0.004
42	3.50	0.17	0.041	(0.301)	0.037	0.004
43	3.58	0.17	0.041	(0.299)	0.037	0.004
44	3.67	0.17	0.041	(0.298)	0.037	0.004
45	3.75	0.17	0.041	(0.297)	0.037	0.004
46	3.83	0.20	0.049	(0.296)	0.044	0.005
47	3.92	0.20	0.049	(0.294)	0.044	0.005
48	4.00	0.20	0.049	(0.293)	0.044	0.005
49	4.08	0.20	0.049	(0.292)	0.044	0.005
50	4.17	0.20	0.049	(0.291)	0.044	0.005
51	4.25	0.20	0.049	(0.289)	0.044	0.005
52	4.33	0.23	0.057	(0.288)	0.051	0.006
53	4.42	0.23	0.057	(0.287)	0.051	0.006
54	4.50	0.23	0.057	(0.286)	0.051	0.006

55	4.58	0.23	0.057	(0.284)	0.051	0.006
56	4.67	0.23	0.057	(0.283)	0.051	0.006
57	4.75	0.23	0.057	(0.282)	0.051	0.006
58	4.83	0.27	0.065	(0.281)	0.059	0.007
59	4.92	0.27	0.065	(0.280)	0.059	0.007
60	5.00	0.27	0.065	(0.278)	0.059	0.007
61	5.08	0.20	0.049	(0.277)	0.044	0.005
62	5.17	0.20	0.049	(0.276)	0.044	0.005
63	5.25	0.20	0.049	(0.275)	0.044	0.005
64	5.33	0.23	0.057	(0.273)	0.051	0.006
65	5.42	0.23	0.057	(0.272)	0.051	0.006
66	5.50	0.23	0.057	(0.271)	0.051	0.006
67	5.58	0.27	0.065	(0.270)	0.059	0.007
68	5.67	0.27	0.065	(0.269)	0.059	0.007
69	5.75	0.27	0.065	(0.268)	0.059	0.007
70	5.83	0.27	0.065	(0.266)	0.059	0.007
71	5.92	0.27	0.065	(0.265)	0.059	0.007
72	6.00	0.27	0.065	(0.264)	0.059	0.007
73	6.08	0.30	0.073	(0.263)	0.066	0.007
74	6.17	0.30	0.073	(0.262)	0.066	0.007
75	6.25	0.30	0.073	(0.260)	0.066	0.007
76	6.33	0.30	0.073	(0.259)	0.066	0.007
77	6.42	0.30	0.073	(0.258)	0.066	0.007
78	6.50	0.30	0.073	(0.257)	0.066	0.007
79	6.58	0.33	0.082	(0.256)	0.073	0.008
80	6.67	0.33	0.082	(0.255)	0.073	0.008
81	6.75	0.33	0.082	(0.254)	0.073	0.008
82	6.83	0.33	0.082	(0.252)	0.073	0.008
83	6.92	0.33	0.082	(0.251)	0.073	0.008
84	7.00	0.33	0.082	(0.250)	0.073	0.008
85	7.08	0.33	0.082	(0.249)	0.073	0.008
86	7.17	0.33	0.082	(0.248)	0.073	0.008
87	7.25	0.33	0.082	(0.247)	0.073	0.008
88	7.33	0.37	0.090	(0.246)	0.081	0.009
89	7.42	0.37	0.090	(0.244)	0.081	0.009
90	7.50	0.37	0.090	(0.243)	0.081	0.009
91	7.58	0.40	0.098	(0.242)	0.088	0.010
92	7.67	0.40	0.098	(0.241)	0.088	0.010
93	7.75	0.40	0.098	(0.240)	0.088	0.010
94	7.83	0.43	0.106	(0.239)	0.095	0.011
95	7.92	0.43	0.106	(0.238)	0.095	0.011
96	8.00	0.43	0.106	(0.237)	0.095	0.011
97	8.08	0.50	0.122	(0.236)	0.110	0.012
98	8.17	0.50	0.122	(0.234)	0.110	0.012
99	8.25	0.50	0.122	(0.233)	0.110	0.012
100	8.33	0.50	0.122	(0.232)	0.110	0.012
101	8.42	0.50	0.122	(0.231)	0.110	0.012
102	8.50	0.50	0.122	(0.230)	0.110	0.012
103	8.58	0.53	0.131	(0.229)	0.117	0.013
104	8.67	0.53	0.131	(0.228)	0.117	0.013
105	8.75	0.53	0.131	(0.227)	0.117	0.013
106	8.83	0.57	0.139	(0.226)	0.125	0.014
107	8.92	0.57	0.139	(0.225)	0.125	0.014
108	9.00	0.57	0.139	(0.224)	0.125	0.014
109	9.08	0.63	0.155	(0.223)	0.140	0.016
110	9.17	0.63	0.155	(0.222)	0.140	0.016

111	9.25	0.63	0.155	(0.221)	0.140	0.016
112	9.33	0.67	0.163	(0.219)	0.147	0.016
113	9.42	0.67	0.163	(0.218)	0.147	0.016
114	9.50	0.67	0.163	(0.217)	0.147	0.016
115	9.58	0.70	0.171	(0.216)	0.154	0.017
116	9.67	0.70	0.171	(0.215)	0.154	0.017
117	9.75	0.70	0.171	(0.214)	0.154	0.017
118	9.83	0.73	0.180	(0.213)	0.162	0.018
119	9.92	0.73	0.180	(0.212)	0.162	0.018
120	10.00	0.73	0.180	(0.211)	0.162	0.018
121	10.08	0.50	0.122	(0.210)	0.110	0.012
122	10.17	0.50	0.122	(0.209)	0.110	0.012
123	10.25	0.50	0.122	(0.208)	0.110	0.012
124	10.33	0.50	0.122	(0.207)	0.110	0.012
125	10.42	0.50	0.122	(0.206)	0.110	0.012
126	10.50	0.50	0.122	(0.205)	0.110	0.012
127	10.58	0.67	0.163	(0.204)	0.147	0.016
128	10.67	0.67	0.163	(0.203)	0.147	0.016
129	10.75	0.67	0.163	(0.202)	0.147	0.016
130	10.83	0.67	0.163	(0.201)	0.147	0.016
131	10.92	0.67	0.163	(0.200)	0.147	0.016
132	11.00	0.67	0.163	(0.199)	0.147	0.016
133	11.08	0.63	0.155	(0.198)	0.140	0.016
134	11.17	0.63	0.155	(0.197)	0.140	0.016
135	11.25	0.63	0.155	(0.196)	0.140	0.016
136	11.33	0.63	0.155	(0.195)	0.140	0.016
137	11.42	0.63	0.155	(0.194)	0.140	0.016
138	11.50	0.63	0.155	(0.193)	0.140	0.016
139	11.58	0.57	0.139	(0.192)	0.125	0.014
140	11.67	0.57	0.139	(0.191)	0.125	0.014
141	11.75	0.57	0.139	(0.190)	0.125	0.014
142	11.83	0.60	0.147	(0.190)	0.132	0.015
143	11.92	0.60	0.147	(0.189)	0.132	0.015
144	12.00	0.60	0.147	(0.188)	0.132	0.015
145	12.08	0.83	0.204	(0.187)	0.184	0.020
146	12.17	0.83	0.204	(0.186)	0.184	0.020
147	12.25	0.83	0.204	(0.185)	0.184	0.020
148	12.33	0.87	0.212	0.184	(0.191)	0.028
149	12.42	0.87	0.212	0.183	(0.191)	0.029
150	12.50	0.87	0.212	0.182	(0.191)	0.030
151	12.58	0.93	0.228	0.181	(0.206)	0.047
152	12.67	0.93	0.228	0.180	(0.206)	0.048
153	12.75	0.93	0.228	0.179	(0.206)	0.049
154	12.83	0.97	0.237	0.178	(0.213)	0.058
155	12.92	0.97	0.237	0.178	(0.213)	0.059
156	13.00	0.97	0.237	0.177	(0.213)	0.060
157	13.08	1.13	0.277	0.176	(0.250)	0.102
158	13.17	1.13	0.277	0.175	(0.250)	0.103
159	13.25	1.13	0.277	0.174	(0.250)	0.103
160	13.33	1.13	0.277	0.173	(0.250)	0.104
161	13.42	1.13	0.277	0.172	(0.250)	0.105
162	13.50	1.13	0.277	0.171	(0.250)	0.106
163	13.58	0.77	0.188	(0.170)	0.169	0.019
164	13.67	0.77	0.188	(0.170)	0.169	0.019
165	13.75	0.77	0.188	0.169	(0.169)	0.019
166	13.83	0.77	0.188	0.168	(0.169)	0.020

167	13.92	0.77	0.188	0.167	(0.169)	0.021
168	14.00	0.77	0.188	0.166	(0.169)	0.022
169	14.08	0.90	0.220	0.165	(0.198)	0.055
170	14.17	0.90	0.220	0.164	(0.198)	0.056
171	14.25	0.90	0.220	0.164	(0.198)	0.057
172	14.33	0.87	0.212	0.163	(0.191)	0.049
173	14.42	0.87	0.212	0.162	(0.191)	0.050
174	14.50	0.87	0.212	0.161	(0.191)	0.051
175	14.58	0.87	0.212	0.160	(0.191)	0.052
176	14.67	0.87	0.212	0.159	(0.191)	0.053
177	14.75	0.87	0.212	0.159	(0.191)	0.054
178	14.83	0.83	0.204	0.158	(0.184)	0.046
179	14.92	0.83	0.204	0.157	(0.184)	0.047
180	15.00	0.83	0.204	0.156	(0.184)	0.048
181	15.08	0.80	0.196	0.155	(0.176)	0.040
182	15.17	0.80	0.196	0.155	(0.176)	0.041
183	15.25	0.80	0.196	0.154	(0.176)	0.042
184	15.33	0.77	0.188	0.153	(0.169)	0.035
185	15.42	0.77	0.188	0.152	(0.169)	0.035
186	15.50	0.77	0.188	0.151	(0.169)	0.036
187	15.58	0.63	0.155	(0.151)	0.140	0.016
188	15.67	0.63	0.155	(0.150)	0.140	0.016
189	15.75	0.63	0.155	(0.149)	0.140	0.016
190	15.83	0.63	0.155	(0.148)	0.140	0.016
191	15.92	0.63	0.155	(0.148)	0.140	0.016
192	16.00	0.63	0.155	(0.147)	0.140	0.016
193	16.08	0.13	0.033	(0.146)	0.029	0.003
194	16.17	0.13	0.033	(0.145)	0.029	0.003
195	16.25	0.13	0.033	(0.145)	0.029	0.003
196	16.33	0.13	0.033	(0.144)	0.029	0.003
197	16.42	0.13	0.033	(0.143)	0.029	0.003
198	16.50	0.13	0.033	(0.142)	0.029	0.003
199	16.58	0.10	0.024	(0.142)	0.022	0.002
200	16.67	0.10	0.024	(0.141)	0.022	0.002
201	16.75	0.10	0.024	(0.140)	0.022	0.002
202	16.83	0.10	0.024	(0.140)	0.022	0.002
203	16.92	0.10	0.024	(0.139)	0.022	0.002
204	17.00	0.10	0.024	(0.138)	0.022	0.002
205	17.08	0.17	0.041	(0.137)	0.037	0.004
206	17.17	0.17	0.041	(0.137)	0.037	0.004
207	17.25	0.17	0.041	(0.136)	0.037	0.004
208	17.33	0.17	0.041	(0.135)	0.037	0.004
209	17.42	0.17	0.041	(0.135)	0.037	0.004
210	17.50	0.17	0.041	(0.134)	0.037	0.004
211	17.58	0.17	0.041	(0.133)	0.037	0.004
212	17.67	0.17	0.041	(0.133)	0.037	0.004
213	17.75	0.17	0.041	(0.132)	0.037	0.004
214	17.83	0.13	0.033	(0.131)	0.029	0.003
215	17.92	0.13	0.033	(0.131)	0.029	0.003
216	18.00	0.13	0.033	(0.130)	0.029	0.003
217	18.08	0.13	0.033	(0.129)	0.029	0.003
218	18.17	0.13	0.033	(0.129)	0.029	0.003
219	18.25	0.13	0.033	(0.128)	0.029	0.003
220	18.33	0.13	0.033	(0.128)	0.029	0.003
221	18.42	0.13	0.033	(0.127)	0.029	0.003
222	18.50	0.13	0.033	(0.126)	0.029	0.003

223	18.58	0.10	0.024	(0.126)	0.022	0.002
224	18.67	0.10	0.024	(0.125)	0.022	0.002
225	18.75	0.10	0.024	(0.125)	0.022	0.002
226	18.83	0.07	0.016	(0.124)	0.015	0.002
227	18.92	0.07	0.016	(0.123)	0.015	0.002
228	19.00	0.07	0.016	(0.123)	0.015	0.002
229	19.08	0.10	0.024	(0.122)	0.022	0.002
230	19.17	0.10	0.024	(0.122)	0.022	0.002
231	19.25	0.10	0.024	(0.121)	0.022	0.002
232	19.33	0.13	0.033	(0.120)	0.029	0.003
233	19.42	0.13	0.033	(0.120)	0.029	0.003
234	19.50	0.13	0.033	(0.119)	0.029	0.003
235	19.58	0.10	0.024	(0.119)	0.022	0.002
236	19.67	0.10	0.024	(0.118)	0.022	0.002
237	19.75	0.10	0.024	(0.118)	0.022	0.002
238	19.83	0.07	0.016	(0.117)	0.015	0.002
239	19.92	0.07	0.016	(0.117)	0.015	0.002
240	20.00	0.07	0.016	(0.116)	0.015	0.002
241	20.08	0.10	0.024	(0.116)	0.022	0.002
242	20.17	0.10	0.024	(0.115)	0.022	0.002
243	20.25	0.10	0.024	(0.115)	0.022	0.002
244	20.33	0.10	0.024	(0.114)	0.022	0.002
245	20.42	0.10	0.024	(0.114)	0.022	0.002
246	20.50	0.10	0.024	(0.113)	0.022	0.002
247	20.58	0.10	0.024	(0.113)	0.022	0.002
248	20.67	0.10	0.024	(0.112)	0.022	0.002
249	20.75	0.10	0.024	(0.112)	0.022	0.002
250	20.83	0.07	0.016	(0.111)	0.015	0.002
251	20.92	0.07	0.016	(0.111)	0.015	0.002
252	21.00	0.07	0.016	(0.110)	0.015	0.002
253	21.08	0.10	0.024	(0.110)	0.022	0.002
254	21.17	0.10	0.024	(0.110)	0.022	0.002
255	21.25	0.10	0.024	(0.109)	0.022	0.002
256	21.33	0.07	0.016	(0.109)	0.015	0.002
257	21.42	0.07	0.016	(0.108)	0.015	0.002
258	21.50	0.07	0.016	(0.108)	0.015	0.002
259	21.58	0.10	0.024	(0.107)	0.022	0.002
260	21.67	0.10	0.024	(0.107)	0.022	0.002
261	21.75	0.10	0.024	(0.107)	0.022	0.002
262	21.83	0.07	0.016	(0.106)	0.015	0.002
263	21.92	0.07	0.016	(0.106)	0.015	0.002
264	22.00	0.07	0.016	(0.106)	0.015	0.002
265	22.08	0.10	0.024	(0.105)	0.022	0.002
266	22.17	0.10	0.024	(0.105)	0.022	0.002
267	22.25	0.10	0.024	(0.105)	0.022	0.002
268	22.33	0.07	0.016	(0.104)	0.015	0.002
269	22.42	0.07	0.016	(0.104)	0.015	0.002
270	22.50	0.07	0.016	(0.104)	0.015	0.002
271	22.58	0.07	0.016	(0.103)	0.015	0.002
272	22.67	0.07	0.016	(0.103)	0.015	0.002
273	22.75	0.07	0.016	(0.103)	0.015	0.002
274	22.83	0.07	0.016	(0.102)	0.015	0.002
275	22.92	0.07	0.016	(0.102)	0.015	0.002
276	23.00	0.07	0.016	(0.102)	0.015	0.002
277	23.08	0.07	0.016	(0.102)	0.015	0.002
278	23.17	0.07	0.016	(0.102)	0.015	0.002

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279  23.25     0.07      0.016       (  0.101)       0.015        0.002
280  23.33     0.07      0.016       (  0.101)       0.015        0.002
281  23.42     0.07      0.016       (  0.101)       0.015        0.002
282  23.50     0.07      0.016       (  0.101)       0.015        0.002
283  23.58     0.07      0.016       (  0.101)       0.015        0.002
284  23.67     0.07      0.016       (  0.100)       0.015        0.002
285  23.75     0.07      0.016       (  0.100)       0.015        0.002
286  23.83     0.07      0.016       (  0.100)       0.015        0.002
287  23.92     0.07      0.016       (  0.100)       0.015        0.002
288  24.00     0.07      0.016       (  0.100)       0.015        0.002
                (Loss Rate Not Used)
    Sum =     100.0                                    Sum =     3.6
       Flood volume = Effective rainfall      0.30(In)
        times area      50.4(Ac.)/[(In)/(Ft.)] =      1.3(Ac.Ft)
       Total soil loss =      1.74(In)
       Total soil loss =     7.309(Ac.Ft)
       Total rainfall =      2.04(In)
       Flood volume =       54800.6 Cubic Feet
       Total soil loss =      318384.8 Cubic Feet
       ---------------------------------------------------------------------
        Peak flow rate of this hydrograph =      5.147(CFS)
       ---------------------------------------------------------------------
       +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          24 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
       ---------------------------------------------------------------------
                   Hydrograph in   5   Minute intervals ((CFS))

       ---------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
 ---------------------------------------------------------------------------
   0+ 5       0.0001      0.01  Q         |         |         |         |
   0+10       0.0004      0.04  Q         |         |         |         |
   0+15       0.0008      0.06  Q         |         |         |         |
   0+20       0.0013      0.07  Q         |         |         |         |
   0+25       0.0020      0.10  Q         |         |         |         |
   0+30       0.0027      0.11  Q         |         |         |         |
   0+35       0.0035      0.11  Q         |         |         |         |
   0+40       0.0043      0.12  Q         |         |         |         |
   0+45       0.0052      0.12  Q         |         |         |         |
   0+50       0.0060      0.13  Q         |         |         |         |
   0+55       0.0070      0.15  Q         |         |         |         |
   1+ 0       0.0081      0.15  Q         |         |         |         |
   1+ 5       0.0092      0.15  Q         |         |         |         |
   1+10       0.0101      0.14  Q         |         |         |         |
   1+15       0.0110      0.13  Q         |         |         |         |
   1+20       0.0119      0.13  Q         |         |         |         |
   1+25       0.0128      0.13  Q         |         |         |         |
   1+30       0.0137      0.13  Q         |         |         |         |
   1+35       0.0145      0.13  Q         |         |         |         |
   1+40       0.0154      0.13  Q         |         |         |         |
   1+45       0.0163      0.13  Q         |         |         |         |
   1+50       0.0171      0.13  Q         |         |         |         |
   1+55       0.0182      0.15  Q         |         |         |         |
   2+ 0       0.0192      0.16  Q         |         |         |         |
   2+ 5       0.0203      0.16  Q         |         |         |         |
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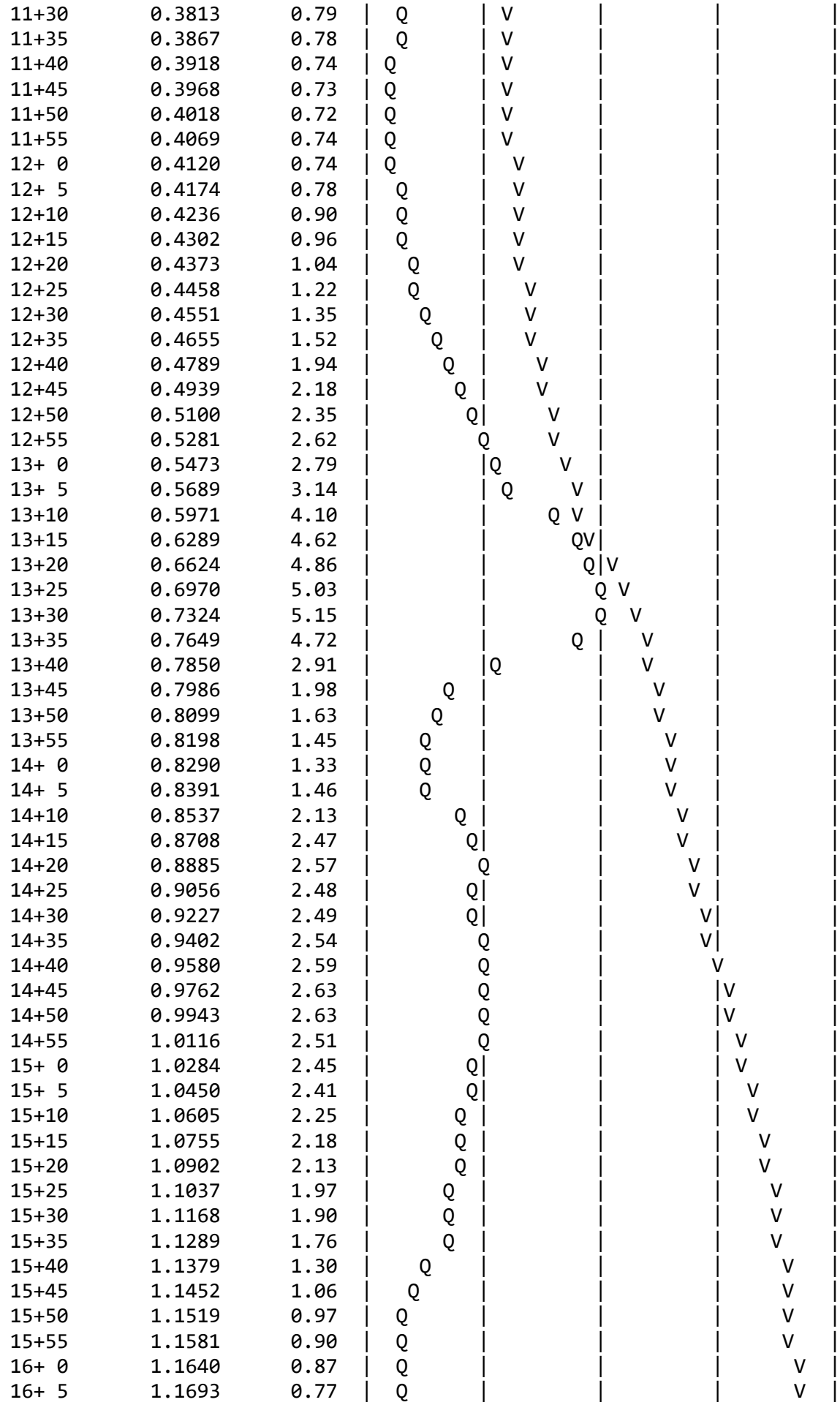
2+10	0.0214	0.16	Q				
2+15	0.0226	0.16	Q				
2+20	0.0237	0.16	Q				
2+25	0.0248	0.16	Q				
2+30	0.0260	0.17	Q				
2+35	0.0271	0.17	Q				
2+40	0.0284	0.19	Q				
2+45	0.0298	0.20	Q				
2+50	0.0312	0.20	Q				
2+55	0.0326	0.20	QV				
3+ 0	0.0340	0.20	QV				
3+ 5	0.0354	0.21	QV				
3+10	0.0368	0.21	QV				
3+15	0.0382	0.21	QV				
3+20	0.0397	0.21	QV				
3+25	0.0411	0.21	QV				
3+30	0.0425	0.21	QV				
3+35	0.0439	0.21	QV				
3+40	0.0454	0.21	QV				
3+45	0.0468	0.21	QV				
3+50	0.0483	0.21	QV				
3+55	0.0498	0.23	QV				
4+ 0	0.0515	0.24	QV				
4+ 5	0.0532	0.24	QV				
4+10	0.0548	0.24	QV				
4+15	0.0565	0.25	QV				
4+20	0.0583	0.25	|Q				
4+25	0.0601	0.27	|Q				
4+30	0.0620	0.28	|Q				
4+35	0.0640	0.28	|QV				
4+40	0.0660	0.29	|QV				
4+45	0.0679	0.29	|QV				
4+50	0.0700	0.29	|QV				
4+55	0.0721	0.31	|QV				
5+ 0	0.0743	0.32	|QV				
5+ 5	0.0765	0.32	|QV				
5+10	0.0784	0.28	|QV				
5+15	0.0803	0.27	|QV				
5+20	0.0821	0.26	|QV				
5+25	0.0840	0.28	|QV				
5+30	0.0860	0.29	|QV				
5+35	0.0880	0.29	|QV				
5+40	0.0901	0.31	|QV				
5+45	0.0923	0.32	|QV				
5+50	0.0946	0.32	|Q V				
5+55	0.0968	0.33	|Q V				
6+ 0	0.0991	0.33	|Q V				
6+ 5	0.1014	0.33	|Q V				
6+10	0.1038	0.35	|Q V				
6+15	0.1063	0.36	|Q V				
6+20	0.1088	0.37	|Q V				
6+25	0.1114	0.37	|Q V				
6+30	0.1139	0.37	|Q V				
6+35	0.1165	0.38	|Q V				
6+40	0.1192	0.39	|Q V				
6+45	0.1220	0.40	|Q V				

6+50	0.1248	0.41	Q V				
6+55	0.1276	0.41	Q V				
7+ 0	0.1305	0.41	Q V				
7+ 5	0.1333	0.41	Q V				
7+10	0.1361	0.41	Q V				
7+15	0.1390	0.41	Q V				
7+20	0.1419	0.42	Q V				
7+25	0.1449	0.44	Q V				
7+30	0.1480	0.45	Q V				
7+35	0.1511	0.45	Q V				
7+40	0.1544	0.47	Q V				
7+45	0.1577	0.48	Q V				
7+50	0.1611	0.49	Q V				
7+55	0.1646	0.51	Q V				
8+ 0	0.1683	0.53	Q V				
8+ 5	0.1720	0.54	Q V				
8+10	0.1760	0.58	Q V				
8+15	0.1801	0.60	Q V				
8+20	0.1843	0.61	Q V				
8+25	0.1885	0.61	Q V				
8+30	0.1927	0.62	Q V				
8+35	0.1970	0.62	Q V				
8+40	0.2014	0.64	Q V				
8+45	0.2059	0.65	Q V				
8+50	0.2105	0.66	Q V				
8+55	0.2151	0.68	Q V				
9+ 0	0.2199	0.69	Q V				
9+ 5	0.2248	0.71	Q V				
9+10	0.2299	0.74	Q V				
9+15	0.2352	0.76	Q V				
9+20	0.2405	0.78	Q V				
9+25	0.2460	0.80	Q V				
9+30	0.2516	0.81	Q V				
9+35	0.2573	0.82	Q V				
9+40	0.2631	0.84	Q V				
9+45	0.2690	0.86	Q V				
9+50	0.2750	0.87	Q V				
9+55	0.2811	0.89	Q V				
10+ 0	0.2873	0.90	Q V				
10+ 5	0.2933	0.87	Q V				
10+10	0.2984	0.75	Q V				
10+15	0.3032	0.69	Q V				
10+20	0.3078	0.67	Q V				
10+25	0.3122	0.65	Q V				
10+30	0.3167	0.64	Q V				
10+35	0.3212	0.66	Q V				
10+40	0.3263	0.74	Q V				
10+45	0.3317	0.78	Q V				
10+50	0.3372	0.80	Q V				
10+55	0.3428	0.81	Q V				
11+ 0	0.3484	0.81	Q V				
11+ 5	0.3540	0.81	Q V				
11+10	0.3595	0.80	Q V				
11+15	0.3650	0.79	Q V				
11+20	0.3704	0.79	Q V				
11+25	0.3759	0.79	Q V				



16+10	1.1727	0.48	|Q	|	|	|	V |
16+15	1.1750	0.34	|Q	|	|	|	V |
16+20	1.1769	0.27	|Q	|	|	|	V |
16+25	1.1784	0.23	Q	|	|	|	V |
16+30	1.1799	0.21	Q	|	|	|	V |
16+35	1.1812	0.19	Q	|	|	|	V |
16+40	1.1823	0.16	Q	|	|	|	V |
16+45	1.1833	0.15	Q	|	|	|	V |
16+50	1.1843	0.14	Q	|	|	|	V |
16+55	1.1852	0.13	Q	|	|	|	V |
17+ 0	1.1860	0.13	Q	|	|	|	V |
17+ 5	1.1870	0.14	Q	|	|	|	V |
17+10	1.1881	0.17	Q	|	|	|	V |
17+15	1.1894	0.19	Q	|	|	|	V |
17+20	1.1908	0.19	Q	|	|	|	V |
17+25	1.1921	0.20	Q	|	|	|	V |
17+30	1.1935	0.20	Q	|	|	|	V |
17+35	1.1949	0.20	Q	|	|	|	V |
17+40	1.1963	0.20	Q	|	|	|	V |
17+45	1.1978	0.21	Q	|	|	|	V |
17+50	1.1991	0.20	Q	|	|	|	V |
17+55	1.2004	0.18	Q	|	|	|	V |
18+ 0	1.2016	0.18	Q	|	|	|	V |
18+ 5	1.2028	0.17	Q	|	|	|	V |
18+10	1.2040	0.17	Q	|	|	|	V |
18+15	1.2052	0.17	Q	|	|	|	V |
18+20	1.2063	0.17	Q	|	|	|	V |
18+25	1.2075	0.17	Q	|	|	|	V |
18+30	1.2086	0.17	Q	|	|	|	V |
18+35	1.2097	0.16	Q	|	|	|	V |
18+40	1.2107	0.14	Q	|	|	|	V |
18+45	1.2116	0.13	Q	|	|	|	V |
18+50	1.2125	0.13	Q	|	|	|	V |
18+55	1.2132	0.11	Q	|	|	|	V |
19+ 0	1.2139	0.10	Q	|	|	|	V |
19+ 5	1.2146	0.10	Q	|	|	|	V |
19+10	1.2153	0.11	Q	|	|	|	V |
19+15	1.2161	0.12	Q	|	|	|	V |
19+20	1.2170	0.13	Q	|	|	|	V |
19+25	1.2180	0.14	Q	|	|	|	V |
19+30	1.2190	0.15	Q	|	|	|	V |
19+35	1.2201	0.15	Q	|	|	|	V |
19+40	1.2210	0.14	Q	|	|	|	V |
19+45	1.2220	0.13	Q	|	|	|	V |
19+50	1.2228	0.12	Q	|	|	|	V |
19+55	1.2235	0.11	Q	|	|	|	V |
20+ 0	1.2242	0.10	Q	|	|	|	V |
20+ 5	1.2248	0.10	Q	|	|	|	V |
20+10	1.2256	0.11	Q	|	|	|	V |
20+15	1.2264	0.12	Q	|	|	|	V |
20+20	1.2272	0.12	Q	|	|	|	V|
20+25	1.2281	0.12	Q	|	|	|	V|
20+30	1.2289	0.12	Q	|	|	|	V|
20+35	1.2298	0.12	Q	|	|	|	V|
20+40	1.2306	0.12	Q	|	|	|	V|
20+45	1.2315	0.12	Q	|	|	|	V|

20+50	1.2323	0.12	Q	|	|	|	V|
20+55	1.2330	0.10	Q	|	|	|	V|
21+ 0	1.2336	0.09	Q	|	|	|	V|
21+ 5	1.2343	0.09	Q	|	|	|	V|
21+10	1.2350	0.11	Q	|	|	|	V|
21+15	1.2358	0.12	Q	|	|	|	V|
21+20	1.2366	0.11	Q	|	|	|	V|
21+25	1.2373	0.10	Q	|	|	|	V|
21+30	1.2379	0.09	Q	|	|	|	V|
21+35	1.2386	0.09	Q	|	|	|	V|
21+40	1.2393	0.11	Q	|	|	|	V|
21+45	1.2401	0.12	Q	|	|	|	V|
21+50	1.2409	0.11	Q	|	|	|	V|
21+55	1.2416	0.10	Q	|	|	|	V|
22+ 0	1.2422	0.09	Q	|	|	|	V|
22+ 5	1.2429	0.09	Q	|	|	|	V|
22+10	1.2436	0.11	Q	|	|	|	V|
22+15	1.2444	0.12	Q	|	|	|	V|
22+20	1.2452	0.11	Q	|	|	|	V|
22+25	1.2459	0.10	Q	|	|	|	V|
22+30	1.2465	0.09	Q	|	|	|	V|
22+35	1.2471	0.09	Q	|	|	|	V|
22+40	1.2477	0.09	Q	|	|	|	V|
22+45	1.2483	0.09	Q	|	|	|	V|
22+50	1.2489	0.08	Q	|	|	|	V|
22+55	1.2495	0.08	Q	|	|	|	V|
23+ 0	1.2500	0.08	Q	|	|	|	V|
23+ 5	1.2506	0.08	Q	|	|	|	V|
23+10	1.2512	0.08	Q	|	|	|	V|
23+15	1.2518	0.08	Q	|	|	|	V|
23+20	1.2523	0.08	Q	|	|	|	V|
23+25	1.2529	0.08	Q	|	|	|	V|
23+30	1.2535	0.08	Q	|	|	|	V|
23+35	1.2540	0.08	Q	|	|	|	V|
23+40	1.2546	0.08	Q	|	|	|	V|
23+45	1.2552	0.08	Q	|	|	|	V|
23+50	1.2557	0.08	Q	|	|	|	V|
23+55	1.2563	0.08	Q	|	|	|	V|
24+ 0	1.2569	0.08	Q	|	|	|	V|
24+ 5	1.2574	0.07	Q	|	|	|	V|
24+10	1.2577	0.04	Q	|	|	|	V|
24+15	1.2578	0.02	Q	|	|	|	V|
24+20	1.2579	0.01	Q	|	|	|	V|
24+25	1.2579	0.01	Q	|	|	|	V|
24+30	1.2580	0.01	Q	|	|	|	V|
24+35	1.2580	0.00	Q	|	|	|	V|
24+40	1.2580	0.00	Q	|	|	|	V|
24+45	1.2580	0.00	Q	|	|	|	V|
24+50	1.2580	0.00	Q	|	|	|	V

U n i t H y d r o g r a p h A n a l y s i s

Study date 05/03/21 File: ONSITEPRE242.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 4010

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

21-0026 - MENIFEE COMMERCE CENTER
ONSITE UNIT HYDROGRAPH ANALYSIS
EXISITNG CONDITION, 2-YEAR 24-HOUR: BUILDING 2
FN: ONSITEPRE242.OUT- TSW

Drainage Area = 20.00(Ac.) = 0.031 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 20.00(Ac.) = 0.031 Sq. Mi.
Length along longest watercourse = 1329.00(Ft.)
Length along longest watercourse measured to centroid = 568.00(Ft.)
Length along longest watercourse = 0.252 Mi.
Length along longest watercourse measured to centroid = 0.108 Mi.
Difference in elevation = 4.10(Ft.)
Slope along watercourse = 16.2889 Ft./Mi.
Average Manning's 'N' = 0.030
Lag time = 0.108 Hr.
Lag time = 6.45 Min.
25% of lag time = 1.61 Min.
40% of lag time = 2.58 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
20.00	2.04	40.80

100 YEAR Area rainfall data:

```
Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       20.00            5.33                 106.60

STORM EVENT (YEAR) =    2.00
Area Averaged 2-Year Rainfall =    2.040(In)
Area Averaged 100-Year Rainfall =    5.330(In)

Point rain (area averaged) =    2.040(In)
Areal adjustment factor =  100.00 %
Adjusted average point rain =    2.040(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
    20.000           86.00         0.000
 Total Area Entered =     20.00(Ac.)


RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
AMC2 AMC-1     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
86.0  71.6      0.343     0.000        0.343       1.000      0.343
                                                 Sum (F) =   0.343
Area averaged mean soil loss (F) (In/Hr) =  0.200
Minimum soil loss rate ((In/Hr)) =  0.100
(for 24 hour storm duration)
Note: User entry of the fm value
Note: User entry of the f value
Soil low loss rate (decimal) =   0.900
------------------------------------------------------------------------

               U n i t  H y d r o g r a p h
                      VALLEY S-Curve
------------------------------------------------------------------------
               Unit Hydrograph Data
------------------------------------------------------------------------
Unit time period   Time % of lag   Distribution   Unit Hydrograph
    (hrs)                          Graph %            (CFS)
------------------------------------------------------------------------
    1   0.083         77.510         12.612              2.542
    2   0.167        155.019         43.511              8.770
    3   0.250        232.529         20.676              4.168
    4   0.333        310.039          8.415              1.696
    5   0.417        387.548          5.067              1.021
    6   0.500        465.058          3.245              0.654
    7   0.583        542.568          2.294              0.462
    8   0.667        620.077          1.631              0.329
    9   0.750        697.587          1.113              0.224
   10   0.833        775.097          0.798              0.161
   11   0.917        852.606          0.637              0.128
                               Sum = 100.000   Sum=      20.156
------------------------------------------------------------------------

 The following loss rate calculations reflect use of the minimum calculated loss
 rate subtracted from the Storm Rain to produce the maximum Effective Rain value
```

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.016	(0.355)	0.015	0.002
2	0.17	0.07	0.016	(0.353)	0.015	0.002
3	0.25	0.07	0.016	(0.352)	0.015	0.002
4	0.33	0.10	0.024	(0.350)	0.022	0.002
5	0.42	0.10	0.024	(0.349)	0.022	0.002
6	0.50	0.10	0.024	(0.348)	0.022	0.002
7	0.58	0.10	0.024	(0.346)	0.022	0.002
8	0.67	0.10	0.024	(0.345)	0.022	0.002
9	0.75	0.10	0.024	(0.344)	0.022	0.002
10	0.83	0.13	0.033	(0.342)	0.029	0.003
11	0.92	0.13	0.033	(0.341)	0.029	0.003
12	1.00	0.13	0.033	(0.340)	0.029	0.003
13	1.08	0.10	0.024	(0.338)	0.022	0.002
14	1.17	0.10	0.024	(0.337)	0.022	0.002
15	1.25	0.10	0.024	(0.336)	0.022	0.002
16	1.33	0.10	0.024	(0.334)	0.022	0.002
17	1.42	0.10	0.024	(0.333)	0.022	0.002
18	1.50	0.10	0.024	(0.332)	0.022	0.002
19	1.58	0.10	0.024	(0.330)	0.022	0.002
20	1.67	0.10	0.024	(0.329)	0.022	0.002
21	1.75	0.10	0.024	(0.328)	0.022	0.002
22	1.83	0.13	0.033	(0.326)	0.029	0.003
23	1.92	0.13	0.033	(0.325)	0.029	0.003
24	2.00	0.13	0.033	(0.324)	0.029	0.003
25	2.08	0.13	0.033	(0.322)	0.029	0.003
26	2.17	0.13	0.033	(0.321)	0.029	0.003
27	2.25	0.13	0.033	(0.320)	0.029	0.003
28	2.33	0.13	0.033	(0.318)	0.029	0.003
29	2.42	0.13	0.033	(0.317)	0.029	0.003
30	2.50	0.13	0.033	(0.316)	0.029	0.003
31	2.58	0.17	0.041	(0.315)	0.037	0.004
32	2.67	0.17	0.041	(0.313)	0.037	0.004
33	2.75	0.17	0.041	(0.312)	0.037	0.004
34	2.83	0.17	0.041	(0.311)	0.037	0.004
35	2.92	0.17	0.041	(0.309)	0.037	0.004
36	3.00	0.17	0.041	(0.308)	0.037	0.004
37	3.08	0.17	0.041	(0.307)	0.037	0.004
38	3.17	0.17	0.041	(0.306)	0.037	0.004
39	3.25	0.17	0.041	(0.304)	0.037	0.004
40	3.33	0.17	0.041	(0.303)	0.037	0.004
41	3.42	0.17	0.041	(0.302)	0.037	0.004
42	3.50	0.17	0.041	(0.301)	0.037	0.004
43	3.58	0.17	0.041	(0.299)	0.037	0.004
44	3.67	0.17	0.041	(0.298)	0.037	0.004
45	3.75	0.17	0.041	(0.297)	0.037	0.004
46	3.83	0.20	0.049	(0.296)	0.044	0.005
47	3.92	0.20	0.049	(0.294)	0.044	0.005
48	4.00	0.20	0.049	(0.293)	0.044	0.005
49	4.08	0.20	0.049	(0.292)	0.044	0.005
50	4.17	0.20	0.049	(0.291)	0.044	0.005
51	4.25	0.20	0.049	(0.289)	0.044	0.005
52	4.33	0.23	0.057	(0.288)	0.051	0.006
53	4.42	0.23	0.057	(0.287)	0.051	0.006
54	4.50	0.23	0.057	(0.286)	0.051	0.006

55	4.58	0.23	0.057	(0.284)	0.051	0.006
56	4.67	0.23	0.057	(0.283)	0.051	0.006
57	4.75	0.23	0.057	(0.282)	0.051	0.006
58	4.83	0.27	0.065	(0.281)	0.059	0.007
59	4.92	0.27	0.065	(0.280)	0.059	0.007
60	5.00	0.27	0.065	(0.278)	0.059	0.007
61	5.08	0.20	0.049	(0.277)	0.044	0.005
62	5.17	0.20	0.049	(0.276)	0.044	0.005
63	5.25	0.20	0.049	(0.275)	0.044	0.005
64	5.33	0.23	0.057	(0.273)	0.051	0.006
65	5.42	0.23	0.057	(0.272)	0.051	0.006
66	5.50	0.23	0.057	(0.271)	0.051	0.006
67	5.58	0.27	0.065	(0.270)	0.059	0.007
68	5.67	0.27	0.065	(0.269)	0.059	0.007
69	5.75	0.27	0.065	(0.268)	0.059	0.007
70	5.83	0.27	0.065	(0.266)	0.059	0.007
71	5.92	0.27	0.065	(0.265)	0.059	0.007
72	6.00	0.27	0.065	(0.264)	0.059	0.007
73	6.08	0.30	0.073	(0.263)	0.066	0.007
74	6.17	0.30	0.073	(0.262)	0.066	0.007
75	6.25	0.30	0.073	(0.260)	0.066	0.007
76	6.33	0.30	0.073	(0.259)	0.066	0.007
77	6.42	0.30	0.073	(0.258)	0.066	0.007
78	6.50	0.30	0.073	(0.257)	0.066	0.007
79	6.58	0.33	0.082	(0.256)	0.073	0.008
80	6.67	0.33	0.082	(0.255)	0.073	0.008
81	6.75	0.33	0.082	(0.254)	0.073	0.008
82	6.83	0.33	0.082	(0.252)	0.073	0.008
83	6.92	0.33	0.082	(0.251)	0.073	0.008
84	7.00	0.33	0.082	(0.250)	0.073	0.008
85	7.08	0.33	0.082	(0.249)	0.073	0.008
86	7.17	0.33	0.082	(0.248)	0.073	0.008
87	7.25	0.33	0.082	(0.247)	0.073	0.008
88	7.33	0.37	0.090	(0.246)	0.081	0.009
89	7.42	0.37	0.090	(0.244)	0.081	0.009
90	7.50	0.37	0.090	(0.243)	0.081	0.009
91	7.58	0.40	0.098	(0.242)	0.088	0.010
92	7.67	0.40	0.098	(0.241)	0.088	0.010
93	7.75	0.40	0.098	(0.240)	0.088	0.010
94	7.83	0.43	0.106	(0.239)	0.095	0.011
95	7.92	0.43	0.106	(0.238)	0.095	0.011
96	8.00	0.43	0.106	(0.237)	0.095	0.011
97	8.08	0.50	0.122	(0.236)	0.110	0.012
98	8.17	0.50	0.122	(0.234)	0.110	0.012
99	8.25	0.50	0.122	(0.233)	0.110	0.012
100	8.33	0.50	0.122	(0.232)	0.110	0.012
101	8.42	0.50	0.122	(0.231)	0.110	0.012
102	8.50	0.50	0.122	(0.230)	0.110	0.012
103	8.58	0.53	0.131	(0.229)	0.117	0.013
104	8.67	0.53	0.131	(0.228)	0.117	0.013
105	8.75	0.53	0.131	(0.227)	0.117	0.013
106	8.83	0.57	0.139	(0.226)	0.125	0.014
107	8.92	0.57	0.139	(0.225)	0.125	0.014
108	9.00	0.57	0.139	(0.224)	0.125	0.014
109	9.08	0.63	0.155	(0.223)	0.140	0.016
110	9.17	0.63	0.155	(0.222)	0.140	0.016

111	9.25	0.63	0.155	(0.221)	0.140	0.016
112	9.33	0.67	0.163	(0.219)	0.147	0.016
113	9.42	0.67	0.163	(0.218)	0.147	0.016
114	9.50	0.67	0.163	(0.217)	0.147	0.016
115	9.58	0.70	0.171	(0.216)	0.154	0.017
116	9.67	0.70	0.171	(0.215)	0.154	0.017
117	9.75	0.70	0.171	(0.214)	0.154	0.017
118	9.83	0.73	0.180	(0.213)	0.162	0.018
119	9.92	0.73	0.180	(0.212)	0.162	0.018
120	10.00	0.73	0.180	(0.211)	0.162	0.018
121	10.08	0.50	0.122	(0.210)	0.110	0.012
122	10.17	0.50	0.122	(0.209)	0.110	0.012
123	10.25	0.50	0.122	(0.208)	0.110	0.012
124	10.33	0.50	0.122	(0.207)	0.110	0.012
125	10.42	0.50	0.122	(0.206)	0.110	0.012
126	10.50	0.50	0.122	(0.205)	0.110	0.012
127	10.58	0.67	0.163	(0.204)	0.147	0.016
128	10.67	0.67	0.163	(0.203)	0.147	0.016
129	10.75	0.67	0.163	(0.202)	0.147	0.016
130	10.83	0.67	0.163	(0.201)	0.147	0.016
131	10.92	0.67	0.163	(0.200)	0.147	0.016
132	11.00	0.67	0.163	(0.199)	0.147	0.016
133	11.08	0.63	0.155	(0.198)	0.140	0.016
134	11.17	0.63	0.155	(0.197)	0.140	0.016
135	11.25	0.63	0.155	(0.196)	0.140	0.016
136	11.33	0.63	0.155	(0.195)	0.140	0.016
137	11.42	0.63	0.155	(0.194)	0.140	0.016
138	11.50	0.63	0.155	(0.193)	0.140	0.016
139	11.58	0.57	0.139	(0.192)	0.125	0.014
140	11.67	0.57	0.139	(0.191)	0.125	0.014
141	11.75	0.57	0.139	(0.190)	0.125	0.014
142	11.83	0.60	0.147	(0.190)	0.132	0.015
143	11.92	0.60	0.147	(0.189)	0.132	0.015
144	12.00	0.60	0.147	(0.188)	0.132	0.015
145	12.08	0.83	0.204	(0.187)	0.184	0.020
146	12.17	0.83	0.204	(0.186)	0.184	0.020
147	12.25	0.83	0.204	(0.185)	0.184	0.020
148	12.33	0.87	0.212	0.184	(0.191)	0.028
149	12.42	0.87	0.212	0.183	(0.191)	0.029
150	12.50	0.87	0.212	0.182	(0.191)	0.030
151	12.58	0.93	0.228	0.181	(0.206)	0.047
152	12.67	0.93	0.228	0.180	(0.206)	0.048
153	12.75	0.93	0.228	0.179	(0.206)	0.049
154	12.83	0.97	0.237	0.178	(0.213)	0.058
155	12.92	0.97	0.237	0.178	(0.213)	0.059
156	13.00	0.97	0.237	0.177	(0.213)	0.060
157	13.08	1.13	0.277	0.176	(0.250)	0.102
158	13.17	1.13	0.277	0.175	(0.250)	0.103
159	13.25	1.13	0.277	0.174	(0.250)	0.103
160	13.33	1.13	0.277	0.173	(0.250)	0.104
161	13.42	1.13	0.277	0.172	(0.250)	0.105
162	13.50	1.13	0.277	0.171	(0.250)	0.106
163	13.58	0.77	0.188	(0.170)	0.169	0.019
164	13.67	0.77	0.188	(0.170)	0.169	0.019
165	13.75	0.77	0.188	0.169	(0.169)	0.019
166	13.83	0.77	0.188	0.168	(0.169)	0.020

167	13.92	0.77	0.188	0.167	(0.169)	0.021
168	14.00	0.77	0.188	0.166	(0.169)	0.022
169	14.08	0.90	0.220	0.165	(0.198)	0.055
170	14.17	0.90	0.220	0.164	(0.198)	0.056
171	14.25	0.90	0.220	0.164	(0.198)	0.057
172	14.33	0.87	0.212	0.163	(0.191)	0.049
173	14.42	0.87	0.212	0.162	(0.191)	0.050
174	14.50	0.87	0.212	0.161	(0.191)	0.051
175	14.58	0.87	0.212	0.160	(0.191)	0.052
176	14.67	0.87	0.212	0.159	(0.191)	0.053
177	14.75	0.87	0.212	0.159	(0.191)	0.054
178	14.83	0.83	0.204	0.158	(0.184)	0.046
179	14.92	0.83	0.204	0.157	(0.184)	0.047
180	15.00	0.83	0.204	0.156	(0.184)	0.048
181	15.08	0.80	0.196	0.155	(0.176)	0.040
182	15.17	0.80	0.196	0.155	(0.176)	0.041
183	15.25	0.80	0.196	0.154	(0.176)	0.042
184	15.33	0.77	0.188	0.153	(0.169)	0.035
185	15.42	0.77	0.188	0.152	(0.169)	0.035
186	15.50	0.77	0.188	0.151	(0.169)	0.036
187	15.58	0.63	0.155	(0.151)	0.140	0.016
188	15.67	0.63	0.155	(0.150)	0.140	0.016
189	15.75	0.63	0.155	(0.149)	0.140	0.016
190	15.83	0.63	0.155	(0.148)	0.140	0.016
191	15.92	0.63	0.155	(0.148)	0.140	0.016
192	16.00	0.63	0.155	(0.147)	0.140	0.016
193	16.08	0.13	0.033	(0.146)	0.029	0.003
194	16.17	0.13	0.033	(0.145)	0.029	0.003
195	16.25	0.13	0.033	(0.145)	0.029	0.003
196	16.33	0.13	0.033	(0.144)	0.029	0.003
197	16.42	0.13	0.033	(0.143)	0.029	0.003
198	16.50	0.13	0.033	(0.142)	0.029	0.003
199	16.58	0.10	0.024	(0.142)	0.022	0.002
200	16.67	0.10	0.024	(0.141)	0.022	0.002
201	16.75	0.10	0.024	(0.140)	0.022	0.002
202	16.83	0.10	0.024	(0.140)	0.022	0.002
203	16.92	0.10	0.024	(0.139)	0.022	0.002
204	17.00	0.10	0.024	(0.138)	0.022	0.002
205	17.08	0.17	0.041	(0.137)	0.037	0.004
206	17.17	0.17	0.041	(0.137)	0.037	0.004
207	17.25	0.17	0.041	(0.136)	0.037	0.004
208	17.33	0.17	0.041	(0.135)	0.037	0.004
209	17.42	0.17	0.041	(0.135)	0.037	0.004
210	17.50	0.17	0.041	(0.134)	0.037	0.004
211	17.58	0.17	0.041	(0.133)	0.037	0.004
212	17.67	0.17	0.041	(0.133)	0.037	0.004
213	17.75	0.17	0.041	(0.132)	0.037	0.004
214	17.83	0.13	0.033	(0.131)	0.029	0.003
215	17.92	0.13	0.033	(0.131)	0.029	0.003
216	18.00	0.13	0.033	(0.130)	0.029	0.003
217	18.08	0.13	0.033	(0.129)	0.029	0.003
218	18.17	0.13	0.033	(0.129)	0.029	0.003
219	18.25	0.13	0.033	(0.128)	0.029	0.003
220	18.33	0.13	0.033	(0.128)	0.029	0.003
221	18.42	0.13	0.033	(0.127)	0.029	0.003
222	18.50	0.13	0.033	(0.126)	0.029	0.003

223	18.58	0.10	0.024	(0.126)	0.022	0.002
224	18.67	0.10	0.024	(0.125)	0.022	0.002
225	18.75	0.10	0.024	(0.125)	0.022	0.002
226	18.83	0.07	0.016	(0.124)	0.015	0.002
227	18.92	0.07	0.016	(0.123)	0.015	0.002
228	19.00	0.07	0.016	(0.123)	0.015	0.002
229	19.08	0.10	0.024	(0.122)	0.022	0.002
230	19.17	0.10	0.024	(0.122)	0.022	0.002
231	19.25	0.10	0.024	(0.121)	0.022	0.002
232	19.33	0.13	0.033	(0.120)	0.029	0.003
233	19.42	0.13	0.033	(0.120)	0.029	0.003
234	19.50	0.13	0.033	(0.119)	0.029	0.003
235	19.58	0.10	0.024	(0.119)	0.022	0.002
236	19.67	0.10	0.024	(0.118)	0.022	0.002
237	19.75	0.10	0.024	(0.118)	0.022	0.002
238	19.83	0.07	0.016	(0.117)	0.015	0.002
239	19.92	0.07	0.016	(0.117)	0.015	0.002
240	20.00	0.07	0.016	(0.116)	0.015	0.002
241	20.08	0.10	0.024	(0.116)	0.022	0.002
242	20.17	0.10	0.024	(0.115)	0.022	0.002
243	20.25	0.10	0.024	(0.115)	0.022	0.002
244	20.33	0.10	0.024	(0.114)	0.022	0.002
245	20.42	0.10	0.024	(0.114)	0.022	0.002
246	20.50	0.10	0.024	(0.113)	0.022	0.002
247	20.58	0.10	0.024	(0.113)	0.022	0.002
248	20.67	0.10	0.024	(0.112)	0.022	0.002
249	20.75	0.10	0.024	(0.112)	0.022	0.002
250	20.83	0.07	0.016	(0.111)	0.015	0.002
251	20.92	0.07	0.016	(0.111)	0.015	0.002
252	21.00	0.07	0.016	(0.110)	0.015	0.002
253	21.08	0.10	0.024	(0.110)	0.022	0.002
254	21.17	0.10	0.024	(0.110)	0.022	0.002
255	21.25	0.10	0.024	(0.109)	0.022	0.002
256	21.33	0.07	0.016	(0.109)	0.015	0.002
257	21.42	0.07	0.016	(0.108)	0.015	0.002
258	21.50	0.07	0.016	(0.108)	0.015	0.002
259	21.58	0.10	0.024	(0.107)	0.022	0.002
260	21.67	0.10	0.024	(0.107)	0.022	0.002
261	21.75	0.10	0.024	(0.107)	0.022	0.002
262	21.83	0.07	0.016	(0.106)	0.015	0.002
263	21.92	0.07	0.016	(0.106)	0.015	0.002
264	22.00	0.07	0.016	(0.106)	0.015	0.002
265	22.08	0.10	0.024	(0.105)	0.022	0.002
266	22.17	0.10	0.024	(0.105)	0.022	0.002
267	22.25	0.10	0.024	(0.105)	0.022	0.002
268	22.33	0.07	0.016	(0.104)	0.015	0.002
269	22.42	0.07	0.016	(0.104)	0.015	0.002
270	22.50	0.07	0.016	(0.104)	0.015	0.002
271	22.58	0.07	0.016	(0.103)	0.015	0.002
272	22.67	0.07	0.016	(0.103)	0.015	0.002
273	22.75	0.07	0.016	(0.103)	0.015	0.002
274	22.83	0.07	0.016	(0.102)	0.015	0.002
275	22.92	0.07	0.016	(0.102)	0.015	0.002
276	23.00	0.07	0.016	(0.102)	0.015	0.002
277	23.08	0.07	0.016	(0.102)	0.015	0.002
278	23.17	0.07	0.016	(0.102)	0.015	0.002

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279  23.25     0.07      0.016       (  0.101)       0.015        0.002
280  23.33     0.07      0.016       (  0.101)       0.015        0.002
281  23.42     0.07      0.016       (  0.101)       0.015        0.002
282  23.50     0.07      0.016       (  0.101)       0.015        0.002
283  23.58     0.07      0.016       (  0.101)       0.015        0.002
284  23.67     0.07      0.016       (  0.100)       0.015        0.002
285  23.75     0.07      0.016       (  0.100)       0.015        0.002
286  23.83     0.07      0.016       (  0.100)       0.015        0.002
287  23.92     0.07      0.016       (  0.100)       0.015        0.002
288  24.00     0.07      0.016       (  0.100)       0.015        0.002
                (Loss Rate Not Used)
    Sum =     100.0                                    Sum =     3.6
       Flood volume = Effective rainfall      0.30(In)
        times area      20.0(Ac.)/[(In)/(Ft.)] =       0.5(Ac.Ft)
       Total soil loss =      1.74(In)
       Total soil loss =     2.901(Ac.Ft)
       Total rainfall =      2.04(In)
       Flood volume =       21749.8 Cubic Feet
       Total soil loss =      126348.4 Cubic Feet
       ------------------------------------------------------------------------
        Peak flow rate of this hydrograph =      2.050(CFS)
       ------------------------------------------------------------------------
       ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                           24 - H O U R    S T O R M
                      R u n o f f      H y d r o g r a p h
       ------------------------------------------------------------------------
                   Hydrograph in   5   Minute intervals ((CFS))

       ------------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
 ------------------------------------------------------------------------
   0+ 5       0.0000      0.00  Q         |         |         |         |
   0+10       0.0002      0.02  Q         |         |         |         |
   0+15       0.0003      0.03  Q         |         |         |         |
   0+20       0.0005      0.03  Q         |         |         |         |
   0+25       0.0008      0.04  Q         |         |         |         |
   0+30       0.0011      0.04  Q         |         |         |         |
   0+35       0.0014      0.05  Q         |         |         |         |
   0+40       0.0017      0.05  Q         |         |         |         |
   0+45       0.0021      0.05  Q         |         |         |         |
   0+50       0.0024      0.05  Q         |         |         |         |
   0+55       0.0028      0.06  Q         |         |         |         |
   1+ 0       0.0032      0.06  Q         |         |         |         |
   1+ 5       0.0037      0.06  Q         |         |         |         |
   1+10       0.0040      0.05  Q         |         |         |         |
   1+15       0.0044      0.05  Q         |         |         |         |
   1+20       0.0048      0.05  Q         |         |         |         |
   1+25       0.0051      0.05  Q         |         |         |         |
   1+30       0.0055      0.05  Q         |         |         |         |
   1+35       0.0058      0.05  Q         |         |         |         |
   1+40       0.0061      0.05  Q         |         |         |         |
   1+45       0.0065      0.05  Q         |         |         |         |
   1+50       0.0068      0.05  Q         |         |         |         |
   1+55       0.0072      0.06  Q         |         |         |         |
   2+ 0       0.0077      0.06  Q         |         |         |         |
   2+ 5       0.0081      0.06  Q         |         |         |         |
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2+10	0.0085	0.06	Q	|	|	|	|
2+15	0.0090	0.06	Q	|	|	|	|
2+20	0.0094	0.07	Q	|	|	|	|
2+25	0.0099	0.07	Q	|	|	|	|
2+30	0.0103	0.07	Q	|	|	|	|
2+35	0.0108	0.07	Q	|	|	|	|
2+40	0.0113	0.08	Q	|	|	|	|
2+45	0.0119	0.08	Q	|	|	|	|
2+50	0.0124	0.08	Q	|	|	|	|
2+55	0.0130	0.08	QV	|	|	|	|
3+ 0	0.0135	0.08	QV	|	|	|	|
3+ 5	0.0141	0.08	QV	|	|	|	|
3+10	0.0147	0.08	QV	|	|	|	|
3+15	0.0152	0.08	QV	|	|	|	|
3+20	0.0158	0.08	QV	|	|	|	|
3+25	0.0164	0.08	QV	|	|	|	|
3+30	0.0169	0.08	QV	|	|	|	|
3+35	0.0175	0.08	QV	|	|	|	|
3+40	0.0181	0.08	QV	|	|	|	|
3+45	0.0186	0.08	QV	|	|	|	|
3+50	0.0192	0.08	QV	|	|	|	|
3+55	0.0198	0.09	QV	|	|	|	|
4+ 0	0.0205	0.09	QV	|	|	|	|
4+ 5	0.0211	0.10	QV	|	|	|	|
4+10	0.0218	0.10	QV	|	|	|	|
4+15	0.0225	0.10	QV	|	|	|	|
4+20	0.0232	0.10	QV	|	|	|	|
4+25	0.0239	0.11	QV	|	|	|	|
4+30	0.0247	0.11	QV	|	|	|	|
4+35	0.0255	0.11	Q V	|	|	|	|
4+40	0.0262	0.11	Q V	|	|	|	|
4+45	0.0270	0.11	Q V	|	|	|	|
4+50	0.0278	0.12	Q V	|	|	|	|
4+55	0.0287	0.12	Q V	|	|	|	|
5+ 0	0.0296	0.13	Q V	|	|	|	|
5+ 5	0.0304	0.12	Q V	|	|	|	|
5+10	0.0312	0.11	Q V	|	|	|	|
5+15	0.0319	0.11	Q V	|	|	|	|
5+20	0.0326	0.10	Q V	|	|	|	|
5+25	0.0334	0.11	Q V	|	|	|	|
5+30	0.0342	0.11	Q V	|	|	|	|
5+35	0.0350	0.12	Q V	|	|	|	|
5+40	0.0358	0.12	Q V	|	|	|	|
5+45	0.0367	0.13	Q V	|	|	|	|
5+50	0.0376	0.13	Q V	|	|	|	|
5+55	0.0385	0.13	Q V	|	|	|	|
6+ 0	0.0394	0.13	Q V	|	|	|	|
6+ 5	0.0403	0.13	Q V	|	|	|	|
6+10	0.0413	0.14	Q V	|	|	|	|
6+15	0.0423	0.14	Q V	|	|	|	|
6+20	0.0433	0.15	Q V	|	|	|	|
6+25	0.0443	0.15	Q V	|	|	|	|
6+30	0.0453	0.15	Q V	|	|	|	|
6+35	0.0463	0.15	Q V	|	|	|	|
6+40	0.0474	0.16	Q V	|	|	|	|
6+45	0.0485	0.16	Q V	|	|	|	|

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 6+50       0.0496      0.16  Q  V      |          |          |          |
 6+55       0.0507      0.16  Q   V     |          |          |          |
 7+ 0       0.0519      0.16  Q   V     |          |          |          |
 7+ 5       0.0530      0.16  Q   V     |          |          |          |
 7+10       0.0541      0.16  Q   V     |          |          |          |
 7+15       0.0553      0.16  Q   V     |          |          |          |
 7+20       0.0564      0.17  Q   V     |          |          |          |
 7+25       0.0576      0.17  Q   V     |          |          |          |
 7+30       0.0588      0.18  Q   V     |          |          |          |
 7+35       0.0601      0.18  Q   V     |          |          |          |
 7+40       0.0614      0.19  Q   V     |          |          |          |
 7+45       0.0627      0.19  Q    V    |          |          |          |
 7+50       0.0640      0.20  Q    V    |          |          |          |
 7+55       0.0655      0.20  Q    V    |          |          |          |
 8+ 0       0.0669      0.21  Q    V    |          |          |          |
 8+ 5       0.0684      0.21  Q    V    |          |          |          |
 8+10       0.0700      0.23  Q    V    |          |          |          |
 8+15       0.0716      0.24  Q    V    |          |          |          |
 8+20       0.0733      0.24  Q    V    |          |          |          |
 8+25       0.0749      0.24  Q     V   |          |          |          |
 8+30       0.0766      0.24  Q     V   |          |          |          |
 8+35       0.0783      0.25  Q     V   |          |          |          |
 8+40       0.0801      0.26  |Q    V   |          |          |          |
 8+45       0.0819      0.26  |Q    V   |          |          |          |
 8+50       0.0837      0.26  |Q    V   |          |          |          |
 8+55       0.0855      0.27  |Q    V   |          |          |          |
 9+ 0       0.0874      0.27  |Q     V  |          |          |          |
 9+ 5       0.0894      0.28  |Q     V  |          |          |          |
 9+10       0.0914      0.30  |Q     V  |          |          |          |
 9+15       0.0935      0.30  |Q     V  |          |          |          |
 9+20       0.0956      0.31  |Q     V  |          |          |          |
 9+25       0.0978      0.32  |Q     V  |          |          |          |
 9+30       0.1000      0.32  |Q      V |          |          |          |
 9+35       0.1023      0.33  |Q      V |          |          |          |
 9+40       0.1046      0.34  |Q      V |          |          |          |
 9+45       0.1069      0.34  |Q      V |          |          |          |
 9+50       0.1093      0.34  |Q      V |          |          |          |
 9+55       0.1118      0.35  |Q      V |          |          |          |
10+ 0       0.1142      0.36  |Q       V|          |          |          |
10+ 5       0.1166      0.34  |Q       V|          |          |          |
10+10       0.1186      0.30  |Q       V|          |          |          |
10+15       0.1205      0.27  |Q       V|          |          |          |
10+20       0.1223      0.26  |Q       V|          |          |          |
10+25       0.1241      0.26  |Q       V|          |          |          |
10+30       0.1258      0.25  |Q        V          |          |          |
10+35       0.1276      0.26  |Q        V          |          |          |
10+40       0.1297      0.30  |Q        V          |          |          |
10+45       0.1318      0.31  |Q        V          |          |          |
10+50       0.1340      0.32  |Q        V          |          |          |
10+55       0.1362      0.32  |Q        V          |          |          |
11+ 0       0.1384      0.32  |Q        |V         |          |          |
11+ 5       0.1407      0.32  |Q        |V         |          |          |
11+10       0.1429      0.32  |Q        |V         |          |          |
11+15       0.1450      0.32  |Q        |V         |          |          |
11+20       0.1472      0.31  |Q        |V         |          |          |
11+25       0.1494      0.31  |Q        |V         |          |          |
```

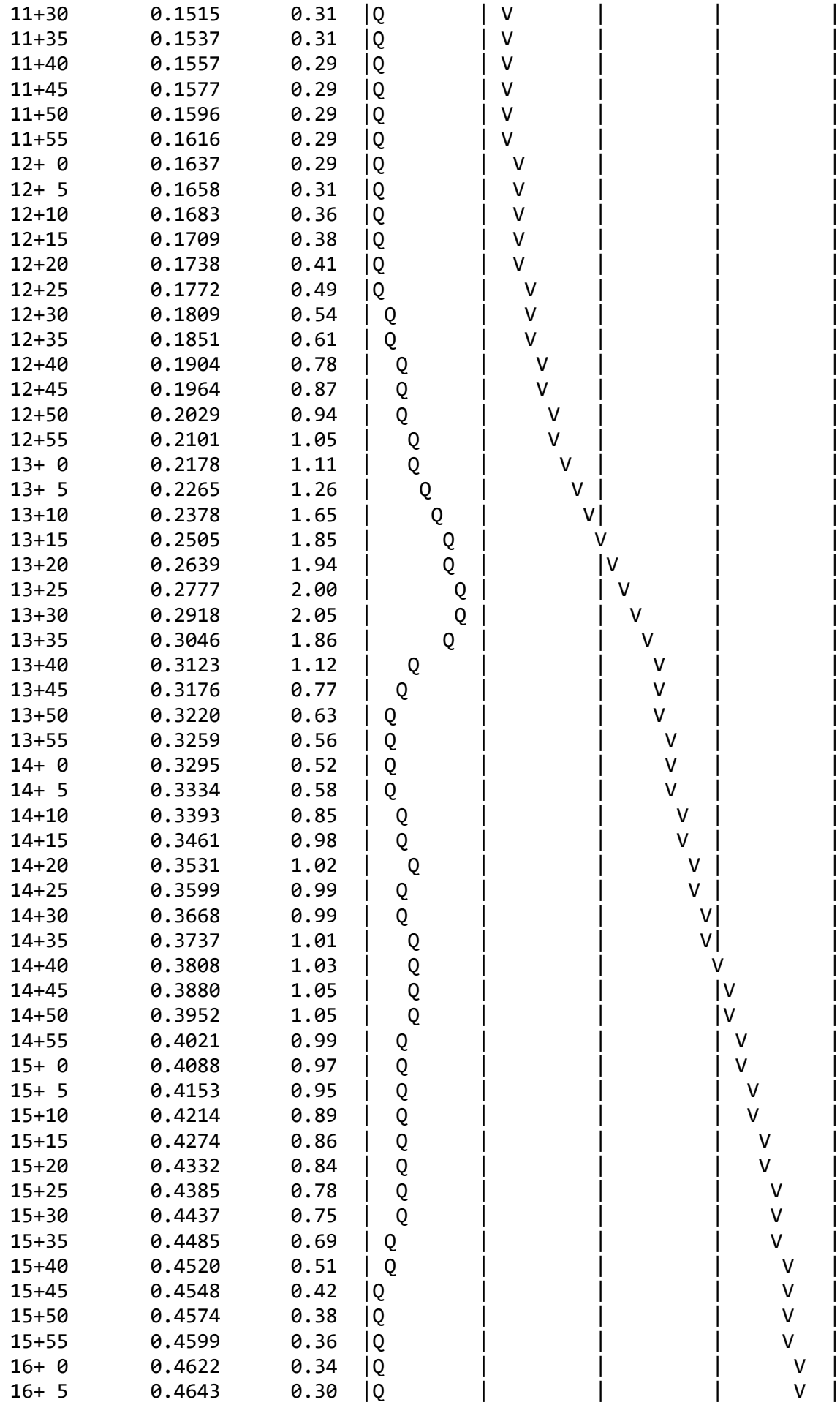

16+10	0.4656	0.18	Q	|	|	|	V |
16+15	0.4665	0.13	Q	|	|	|	V |
16+20	0.4672	0.10	Q	|	|	|	V |
16+25	0.4678	0.09	Q	|	|	|	V |
16+30	0.4684	0.08	Q	|	|	|	V |
16+35	0.4689	0.07	Q	|	|	|	V |
16+40	0.4693	0.06	Q	|	|	|	V |
16+45	0.4697	0.06	Q	|	|	|	V |
16+50	0.4701	0.05	Q	|	|	|	V |
16+55	0.4704	0.05	Q	|	|	|	V |
17+ 0	0.4708	0.05	Q	|	|	|	V |
17+ 5	0.4711	0.05	Q	|	|	|	V |
17+10	0.4716	0.07	Q	|	|	|	V |
17+15	0.4721	0.07	Q	|	|	|	V |
17+20	0.4726	0.08	Q	|	|	|	V |
17+25	0.4732	0.08	Q	|	|	|	V |
17+30	0.4737	0.08	Q	|	|	|	V |
17+35	0.4743	0.08	Q	|	|	|	V |
17+40	0.4749	0.08	Q	|	|	|	V |
17+45	0.4754	0.08	Q	|	|	|	V |
17+50	0.4760	0.08	Q	|	|	|	V |
17+55	0.4765	0.07	Q	|	|	|	V |
18+ 0	0.4770	0.07	Q	|	|	|	V |
18+ 5	0.4774	0.07	Q	|	|	|	V |
18+10	0.4779	0.07	Q	|	|	|	V |
18+15	0.4784	0.07	Q	|	|	|	V |
18+20	0.4788	0.07	Q	|	|	|	V |
18+25	0.4793	0.07	Q	|	|	|	V |
18+30	0.4797	0.07	Q	|	|	|	V |
18+35	0.4802	0.06	Q	|	|	|	V |
18+40	0.4806	0.06	Q	|	|	|	V |
18+45	0.4809	0.05	Q	|	|	|	V |
18+50	0.4813	0.05	Q	|	|	|	V |
18+55	0.4816	0.04	Q	|	|	|	V |
19+ 0	0.4818	0.04	Q	|	|	|	V |
19+ 5	0.4821	0.04	Q	|	|	|	V |
19+10	0.4824	0.04	Q	|	|	|	V |
19+15	0.4827	0.05	Q	|	|	|	V |
19+20	0.4830	0.05	Q	|	|	|	V |
19+25	0.4834	0.06	Q	|	|	|	V |
19+30	0.4839	0.06	Q	|	|	|	V |
19+35	0.4843	0.06	Q	|	|	|	V |
19+40	0.4847	0.05	Q	|	|	|	V |
19+45	0.4850	0.05	Q	|	|	|	V |
19+50	0.4853	0.05	Q	|	|	|	V |
19+55	0.4856	0.04	Q	|	|	|	V |
20+ 0	0.4859	0.04	Q	|	|	|	V |
20+ 5	0.4862	0.04	Q	|	|	|	V |
20+10	0.4865	0.04	Q	|	|	|	V |
20+15	0.4868	0.05	Q	|	|	|	V |
20+20	0.4871	0.05	Q	|	|	|	V|
20+25	0.4874	0.05	Q	|	|	|	V|
20+30	0.4878	0.05	Q	|	|	|	V|
20+35	0.4881	0.05	Q	|	|	|	V|
20+40	0.4884	0.05	Q	|	|	|	V|
20+45	0.4888	0.05	Q	|	|	|	V|

20+50	0.4891	0.05	Q	|	|	|	V|
20+55	0.4894	0.04	Q	|	|	|	V|
21+ 0	0.4896	0.04	Q	|	|	|	V|
21+ 5	0.4899	0.04	Q	|	|	|	V|
21+10	0.4902	0.04	Q	|	|	|	V|
21+15	0.4905	0.05	Q	|	|	|	V|
21+20	0.4908	0.05	Q	|	|	|	V|
21+25	0.4911	0.04	Q	|	|	|	V|
21+30	0.4914	0.04	Q	|	|	|	V|
21+35	0.4916	0.04	Q	|	|	|	V|
21+40	0.4919	0.04	Q	|	|	|	V|
21+45	0.4922	0.05	Q	|	|	|	V|
21+50	0.4925	0.05	Q	|	|	|	V|
21+55	0.4928	0.04	Q	|	|	|	V|
22+ 0	0.4931	0.04	Q	|	|	|	V|
22+ 5	0.4933	0.04	Q	|	|	|	V|
22+10	0.4936	0.04	Q	|	|	|	V|
22+15	0.4939	0.05	Q	|	|	|	V|
22+20	0.4942	0.05	Q	|	|	|	V|
22+25	0.4945	0.04	Q	|	|	|	V|
22+30	0.4948	0.04	Q	|	|	|	V|
22+35	0.4950	0.03	Q	|	|	|	V|
22+40	0.4952	0.03	Q	|	|	|	V|
22+45	0.4955	0.03	Q	|	|	|	V|
22+50	0.4957	0.03	Q	|	|	|	V|
22+55	0.4959	0.03	Q	|	|	|	V|
23+ 0	0.4961	0.03	Q	|	|	|	V|
23+ 5	0.4964	0.03	Q	|	|	|	V|
23+10	0.4966	0.03	Q	|	|	|	V|
23+15	0.4968	0.03	Q	|	|	|	V|
23+20	0.4971	0.03	Q	|	|	|	V|
23+25	0.4973	0.03	Q	|	|	|	V|
23+30	0.4975	0.03	Q	|	|	|	V|
23+35	0.4977	0.03	Q	|	|	|	V|
23+40	0.4980	0.03	Q	|	|	|	V|
23+45	0.4982	0.03	Q	|	|	|	V|
23+50	0.4984	0.03	Q	|	|	|	V|
23+55	0.4986	0.03	Q	|	|	|	V|
24+ 0	0.4989	0.03	Q	|	|	|	V|
24+ 5	0.4991	0.03	Q	|	|	|	V|
24+10	0.4992	0.01	Q	|	|	|	V|
24+15	0.4992	0.01	Q	|	|	|	V|
24+20	0.4992	0.00	Q	|	|	|	V|
24+25	0.4993	0.00	Q	|	|	|	V|
24+30	0.4993	0.00	Q	|	|	|	V|
24+35	0.4993	0.00	Q	|	|	|	V|
24+40	0.4993	0.00	Q	|	|	|	V|
24+45	0.4993	0.00	Q	|	|	|	V|
24+50	0.4993	0.00	Q	|	|	|	V|

PROPOSED CONDITION 2-YEAR, 24-HOUR UNIT HYDROGRAPHS

U n i t H y d r o g r a p h A n a l y s i s

Study date 05/03/21 File: ONSITEPROP242.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 4010

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

20-0026 - MENIFEE COMMERCE CENTER
ONSITE UNIT HYDROGRAPH ANALYSIS
PROPOSED CONDITION, 2-YEAR 24-HOUR: BUILDING 1
FN: ONSITEPROP242.OUT- TSW

Drainage Area = 50.40(Ac.) = 0.079 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 50.40(Ac.) = 0.079 Sq. Mi.
Length along longest watercourse = 3240.00(Ft.)
Length along longest watercourse measured to centroid = 1908.00(Ft.)
Length along longest watercourse = 0.614 Mi.
Length along longest watercourse measured to centroid = 0.361 Mi.
Difference in elevation = 13.10(Ft.)
Slope along watercourse = 21.3481 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.114 Hr.
Lag time = 6.81 Min.
25% of lag time = 1.70 Min.
40% of lag time = 2.72 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
50.40	2.04	102.82

100 YEAR Area rainfall data:

```
Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       50.40            5.33                 268.63

STORM EVENT (YEAR) =    2.00
Area Averaged 2-Year Rainfall =    2.040(In)
Area Averaged 100-Year Rainfall =    5.330(In)

Point rain (area averaged) =    2.040(In)
Areal adjustment factor =   99.99 %
Adjusted average point rain =    2.040(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
    50.400           69.00         0.900
 Total Area Entered =     50.40(Ac.)


RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
AMC2 AMC-1     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
69.0  49.8      0.574     0.900        0.109       1.000      0.109
                                                 Sum (F) =   0.109
Area averaged mean soil loss (F) (In/Hr) =  0.109
Minimum soil loss rate ((In/Hr)) =  0.055
(for 24 hour storm duration)
Soil low loss rate (decimal) =   0.200
------------------------------------------------------------------------

               U n i t  H y d r o g r a p h
                       VALLEY S-Curve
------------------------------------------------------------------------
               Unit Hydrograph Data
------------------------------------------------------------------------
Unit time period   Time % of lag   Distribution   Unit Hydrograph
    (hrs)                          Graph %            (CFS)
------------------------------------------------------------------------
    1   0.083         73.396         11.507              5.845
    2   0.167        146.791         41.767             21.215
    3   0.250        220.187         21.998             11.174
    4   0.333        293.582          8.720              4.429
    5   0.417        366.978          5.290              2.687
    6   0.500        440.373          3.446              1.751
    7   0.583        513.769          2.372              1.205
    8   0.667        587.164          1.772              0.900
    9   0.750        660.560          1.254              0.637
   10   0.833        733.955          0.846              0.430
   11   0.917        807.351          1.027              0.522
                               Sum = 100.000   Sum=      50.794
------------------------------------------------------------------------

 The following loss rate calculations reflect use of the minimum calculated loss
 rate subtracted from the Storm Rain to produce the maximum Effective Rain value

 Unit Time   Pattern   Storm Rain     Loss rate(In./Hr)     Effective
      (Hr.)  Percent   (In/Hr)         Max   |   Low        (In/Hr)
```

1	0.08	0.07	0.016	(0.193)	0.003	0.013
2	0.17	0.07	0.016	(0.193)	0.003	0.013
3	0.25	0.07	0.016	(0.192)	0.003	0.013
4	0.33	0.10	0.024	(0.191)	0.005	0.020
5	0.42	0.10	0.024	(0.190)	0.005	0.020
6	0.50	0.10	0.024	(0.190)	0.005	0.020
7	0.58	0.10	0.024	(0.189)	0.005	0.020
8	0.67	0.10	0.024	(0.188)	0.005	0.020
9	0.75	0.10	0.024	(0.187)	0.005	0.020
10	0.83	0.13	0.033	(0.187)	0.007	0.026
11	0.92	0.13	0.033	(0.186)	0.007	0.026
12	1.00	0.13	0.033	(0.185)	0.007	0.026
13	1.08	0.10	0.024	(0.184)	0.005	0.020
14	1.17	0.10	0.024	(0.184)	0.005	0.020
15	1.25	0.10	0.024	(0.183)	0.005	0.020
16	1.33	0.10	0.024	(0.182)	0.005	0.020
17	1.42	0.10	0.024	(0.182)	0.005	0.020
18	1.50	0.10	0.024	(0.181)	0.005	0.020
19	1.58	0.10	0.024	(0.180)	0.005	0.020
20	1.67	0.10	0.024	(0.179)	0.005	0.020
21	1.75	0.10	0.024	(0.179)	0.005	0.020
22	1.83	0.13	0.033	(0.178)	0.007	0.026
23	1.92	0.13	0.033	(0.177)	0.007	0.026
24	2.00	0.13	0.033	(0.176)	0.007	0.026
25	2.08	0.13	0.033	(0.176)	0.007	0.026
26	2.17	0.13	0.033	(0.175)	0.007	0.026
27	2.25	0.13	0.033	(0.174)	0.007	0.026
28	2.33	0.13	0.033	(0.174)	0.007	0.026
29	2.42	0.13	0.033	(0.173)	0.007	0.026
30	2.50	0.13	0.033	(0.172)	0.007	0.026
31	2.58	0.17	0.041	(0.172)	0.008	0.033
32	2.67	0.17	0.041	(0.171)	0.008	0.033
33	2.75	0.17	0.041	(0.170)	0.008	0.033
34	2.83	0.17	0.041	(0.169)	0.008	0.033
35	2.92	0.17	0.041	(0.169)	0.008	0.033
36	3.00	0.17	0.041	(0.168)	0.008	0.033
37	3.08	0.17	0.041	(0.167)	0.008	0.033
38	3.17	0.17	0.041	(0.167)	0.008	0.033
39	3.25	0.17	0.041	(0.166)	0.008	0.033
40	3.33	0.17	0.041	(0.165)	0.008	0.033
41	3.42	0.17	0.041	(0.165)	0.008	0.033
42	3.50	0.17	0.041	(0.164)	0.008	0.033
43	3.58	0.17	0.041	(0.163)	0.008	0.033
44	3.67	0.17	0.041	(0.162)	0.008	0.033
45	3.75	0.17	0.041	(0.162)	0.008	0.033
46	3.83	0.20	0.049	(0.161)	0.010	0.039
47	3.92	0.20	0.049	(0.160)	0.010	0.039
48	4.00	0.20	0.049	(0.160)	0.010	0.039
49	4.08	0.20	0.049	(0.159)	0.010	0.039
50	4.17	0.20	0.049	(0.158)	0.010	0.039
51	4.25	0.20	0.049	(0.158)	0.010	0.039
52	4.33	0.23	0.057	(0.157)	0.011	0.046
53	4.42	0.23	0.057	(0.156)	0.011	0.046
54	4.50	0.23	0.057	(0.156)	0.011	0.046
55	4.58	0.23	0.057	(0.155)	0.011	0.046
56	4.67	0.23	0.057	(0.154)	0.011	0.046

57	4.75	0.23	0.057	(0.154)	0.011	0.046
58	4.83	0.27	0.065	(0.153)	0.013	0.052
59	4.92	0.27	0.065	(0.152)	0.013	0.052
60	5.00	0.27	0.065	(0.152)	0.013	0.052
61	5.08	0.20	0.049	(0.151)	0.010	0.039
62	5.17	0.20	0.049	(0.150)	0.010	0.039
63	5.25	0.20	0.049	(0.150)	0.010	0.039
64	5.33	0.23	0.057	(0.149)	0.011	0.046
65	5.42	0.23	0.057	(0.148)	0.011	0.046
66	5.50	0.23	0.057	(0.148)	0.011	0.046
67	5.58	0.27	0.065	(0.147)	0.013	0.052
68	5.67	0.27	0.065	(0.147)	0.013	0.052
69	5.75	0.27	0.065	(0.146)	0.013	0.052
70	5.83	0.27	0.065	(0.145)	0.013	0.052
71	5.92	0.27	0.065	(0.145)	0.013	0.052
72	6.00	0.27	0.065	(0.144)	0.013	0.052
73	6.08	0.30	0.073	(0.143)	0.015	0.059
74	6.17	0.30	0.073	(0.143)	0.015	0.059
75	6.25	0.30	0.073	(0.142)	0.015	0.059
76	6.33	0.30	0.073	(0.141)	0.015	0.059
77	6.42	0.30	0.073	(0.141)	0.015	0.059
78	6.50	0.30	0.073	(0.140)	0.015	0.059
79	6.58	0.33	0.082	(0.140)	0.016	0.065
80	6.67	0.33	0.082	(0.139)	0.016	0.065
81	6.75	0.33	0.082	(0.138)	0.016	0.065
82	6.83	0.33	0.082	(0.138)	0.016	0.065
83	6.92	0.33	0.082	(0.137)	0.016	0.065
84	7.00	0.33	0.082	(0.136)	0.016	0.065
85	7.08	0.33	0.082	(0.136)	0.016	0.065
86	7.17	0.33	0.082	(0.135)	0.016	0.065
87	7.25	0.33	0.082	(0.135)	0.016	0.065
88	7.33	0.37	0.090	(0.134)	0.018	0.072
89	7.42	0.37	0.090	(0.133)	0.018	0.072
90	7.50	0.37	0.090	(0.133)	0.018	0.072
91	7.58	0.40	0.098	(0.132)	0.020	0.078
92	7.67	0.40	0.098	(0.131)	0.020	0.078
93	7.75	0.40	0.098	(0.131)	0.020	0.078
94	7.83	0.43	0.106	(0.130)	0.021	0.085
95	7.92	0.43	0.106	(0.130)	0.021	0.085
96	8.00	0.43	0.106	(0.129)	0.021	0.085
97	8.08	0.50	0.122	(0.128)	0.024	0.098
98	8.17	0.50	0.122	(0.128)	0.024	0.098
99	8.25	0.50	0.122	(0.127)	0.024	0.098
100	8.33	0.50	0.122	(0.127)	0.024	0.098
101	8.42	0.50	0.122	(0.126)	0.024	0.098
102	8.50	0.50	0.122	(0.125)	0.024	0.098
103	8.58	0.53	0.131	(0.125)	0.026	0.104
104	8.67	0.53	0.131	(0.124)	0.026	0.104
105	8.75	0.53	0.131	(0.124)	0.026	0.104
106	8.83	0.57	0.139	(0.123)	0.028	0.111
107	8.92	0.57	0.139	(0.123)	0.028	0.111
108	9.00	0.57	0.139	(0.122)	0.028	0.111
109	9.08	0.63	0.155	(0.121)	0.031	0.124
110	9.17	0.63	0.155	(0.121)	0.031	0.124
111	9.25	0.63	0.155	(0.120)	0.031	0.124
112	9.33	0.67	0.163	(0.120)	0.033	0.131

113	9.42	0.67	0.163	(0.119)	0.033	0.131
114	9.50	0.67	0.163	(0.119)	0.033	0.131
115	9.58	0.70	0.171	(0.118)	0.034	0.137
116	9.67	0.70	0.171	(0.117)	0.034	0.137
117	9.75	0.70	0.171	(0.117)	0.034	0.137
118	9.83	0.73	0.180	(0.116)	0.036	0.144
119	9.92	0.73	0.180	(0.116)	0.036	0.144
120	10.00	0.73	0.180	(0.115)	0.036	0.144
121	10.08	0.50	0.122	(0.115)	0.024	0.098
122	10.17	0.50	0.122	(0.114)	0.024	0.098
123	10.25	0.50	0.122	(0.113)	0.024	0.098
124	10.33	0.50	0.122	(0.113)	0.024	0.098
125	10.42	0.50	0.122	(0.112)	0.024	0.098
126	10.50	0.50	0.122	(0.112)	0.024	0.098
127	10.58	0.67	0.163	(0.111)	0.033	0.131
128	10.67	0.67	0.163	(0.111)	0.033	0.131
129	10.75	0.67	0.163	(0.110)	0.033	0.131
130	10.83	0.67	0.163	(0.110)	0.033	0.131
131	10.92	0.67	0.163	(0.109)	0.033	0.131
132	11.00	0.67	0.163	(0.109)	0.033	0.131
133	11.08	0.63	0.155	(0.108)	0.031	0.124
134	11.17	0.63	0.155	(0.108)	0.031	0.124
135	11.25	0.63	0.155	(0.107)	0.031	0.124
136	11.33	0.63	0.155	(0.106)	0.031	0.124
137	11.42	0.63	0.155	(0.106)	0.031	0.124
138	11.50	0.63	0.155	(0.105)	0.031	0.124
139	11.58	0.57	0.139	(0.105)	0.028	0.111
140	11.67	0.57	0.139	(0.104)	0.028	0.111
141	11.75	0.57	0.139	(0.104)	0.028	0.111
142	11.83	0.60	0.147	(0.103)	0.029	0.117
143	11.92	0.60	0.147	(0.103)	0.029	0.117
144	12.00	0.60	0.147	(0.102)	0.029	0.117
145	12.08	0.83	0.204	(0.102)	0.041	0.163
146	12.17	0.83	0.204	(0.101)	0.041	0.163
147	12.25	0.83	0.204	(0.101)	0.041	0.163
148	12.33	0.87	0.212	(0.100)	0.042	0.170
149	12.42	0.87	0.212	(0.100)	0.042	0.170
150	12.50	0.87	0.212	(0.099)	0.042	0.170
151	12.58	0.93	0.228	(0.099)	0.046	0.183
152	12.67	0.93	0.228	(0.098)	0.046	0.183
153	12.75	0.93	0.228	(0.098)	0.046	0.183
154	12.83	0.97	0.237	(0.097)	0.047	0.189
155	12.92	0.97	0.237	(0.097)	0.047	0.189
156	13.00	0.97	0.237	(0.096)	0.047	0.189
157	13.08	1.13	0.277	(0.096)	0.055	0.222
158	13.17	1.13	0.277	(0.095)	0.055	0.222
159	13.25	1.13	0.277	(0.095)	0.055	0.222
160	13.33	1.13	0.277	(0.094)	0.055	0.222
161	13.42	1.13	0.277	(0.094)	0.055	0.222
162	13.50	1.13	0.277	(0.093)	0.055	0.222
163	13.58	0.77	0.188	(0.093)	0.038	0.150
164	13.67	0.77	0.188	(0.092)	0.038	0.150
165	13.75	0.77	0.188	(0.092)	0.038	0.150
166	13.83	0.77	0.188	(0.092)	0.038	0.150
167	13.92	0.77	0.188	(0.091)	0.038	0.150
168	14.00	0.77	0.188	(0.091)	0.038	0.150

169	14.08	0.90	0.220	(0.090)	0.044	0.176
170	14.17	0.90	0.220	(0.090)	0.044	0.176
171	14.25	0.90	0.220	(0.089)	0.044	0.176
172	14.33	0.87	0.212	(0.089)	0.042	0.170
173	14.42	0.87	0.212	(0.088)	0.042	0.170
174	14.50	0.87	0.212	(0.088)	0.042	0.170
175	14.58	0.87	0.212	(0.087)	0.042	0.170
176	14.67	0.87	0.212	(0.087)	0.042	0.170
177	14.75	0.87	0.212	(0.086)	0.042	0.170
178	14.83	0.83	0.204	(0.086)	0.041	0.163
179	14.92	0.83	0.204	(0.086)	0.041	0.163
180	15.00	0.83	0.204	(0.085)	0.041	0.163
181	15.08	0.80	0.196	(0.085)	0.039	0.157
182	15.17	0.80	0.196	(0.084)	0.039	0.157
183	15.25	0.80	0.196	(0.084)	0.039	0.157
184	15.33	0.77	0.188	(0.083)	0.038	0.150
185	15.42	0.77	0.188	(0.083)	0.038	0.150
186	15.50	0.77	0.188	(0.083)	0.038	0.150
187	15.58	0.63	0.155	(0.082)	0.031	0.124
188	15.67	0.63	0.155	(0.082)	0.031	0.124
189	15.75	0.63	0.155	(0.081)	0.031	0.124
190	15.83	0.63	0.155	(0.081)	0.031	0.124
191	15.92	0.63	0.155	(0.080)	0.031	0.124
192	16.00	0.63	0.155	(0.080)	0.031	0.124
193	16.08	0.13	0.033	(0.080)	0.007	0.026
194	16.17	0.13	0.033	(0.079)	0.007	0.026
195	16.25	0.13	0.033	(0.079)	0.007	0.026
196	16.33	0.13	0.033	(0.078)	0.007	0.026
197	16.42	0.13	0.033	(0.078)	0.007	0.026
198	16.50	0.13	0.033	(0.078)	0.007	0.026
199	16.58	0.10	0.024	(0.077)	0.005	0.020
200	16.67	0.10	0.024	(0.077)	0.005	0.020
201	16.75	0.10	0.024	(0.076)	0.005	0.020
202	16.83	0.10	0.024	(0.076)	0.005	0.020
203	16.92	0.10	0.024	(0.076)	0.005	0.020
204	17.00	0.10	0.024	(0.075)	0.005	0.020
205	17.08	0.17	0.041	(0.075)	0.008	0.033
206	17.17	0.17	0.041	(0.075)	0.008	0.033
207	17.25	0.17	0.041	(0.074)	0.008	0.033
208	17.33	0.17	0.041	(0.074)	0.008	0.033
209	17.42	0.17	0.041	(0.073)	0.008	0.033
210	17.50	0.17	0.041	(0.073)	0.008	0.033
211	17.58	0.17	0.041	(0.073)	0.008	0.033
212	17.67	0.17	0.041	(0.072)	0.008	0.033
213	17.75	0.17	0.041	(0.072)	0.008	0.033
214	17.83	0.13	0.033	(0.072)	0.007	0.026
215	17.92	0.13	0.033	(0.071)	0.007	0.026
216	18.00	0.13	0.033	(0.071)	0.007	0.026
217	18.08	0.13	0.033	(0.071)	0.007	0.026
218	18.17	0.13	0.033	(0.070)	0.007	0.026
219	18.25	0.13	0.033	(0.070)	0.007	0.026
220	18.33	0.13	0.033	(0.070)	0.007	0.026
221	18.42	0.13	0.033	(0.069)	0.007	0.026
222	18.50	0.13	0.033	(0.069)	0.007	0.026
223	18.58	0.10	0.024	(0.069)	0.005	0.020
224	18.67	0.10	0.024	(0.068)	0.005	0.020

225	18.75	0.10	0.024	(0.068)	0.005	0.020
226	18.83	0.07	0.016	(0.068)	0.003	0.013
227	18.92	0.07	0.016	(0.067)	0.003	0.013
228	19.00	0.07	0.016	(0.067)	0.003	0.013
229	19.08	0.10	0.024	(0.067)	0.005	0.020
230	19.17	0.10	0.024	(0.066)	0.005	0.020
231	19.25	0.10	0.024	(0.066)	0.005	0.020
232	19.33	0.13	0.033	(0.066)	0.007	0.026
233	19.42	0.13	0.033	(0.065)	0.007	0.026
234	19.50	0.13	0.033	(0.065)	0.007	0.026
235	19.58	0.10	0.024	(0.065)	0.005	0.020
236	19.67	0.10	0.024	(0.064)	0.005	0.020
237	19.75	0.10	0.024	(0.064)	0.005	0.020
238	19.83	0.07	0.016	(0.064)	0.003	0.013
239	19.92	0.07	0.016	(0.064)	0.003	0.013
240	20.00	0.07	0.016	(0.063)	0.003	0.013
241	20.08	0.10	0.024	(0.063)	0.005	0.020
242	20.17	0.10	0.024	(0.063)	0.005	0.020
243	20.25	0.10	0.024	(0.062)	0.005	0.020
244	20.33	0.10	0.024	(0.062)	0.005	0.020
245	20.42	0.10	0.024	(0.062)	0.005	0.020
246	20.50	0.10	0.024	(0.062)	0.005	0.020
247	20.58	0.10	0.024	(0.061)	0.005	0.020
248	20.67	0.10	0.024	(0.061)	0.005	0.020
249	20.75	0.10	0.024	(0.061)	0.005	0.020
250	20.83	0.07	0.016	(0.061)	0.003	0.013
251	20.92	0.07	0.016	(0.060)	0.003	0.013
252	21.00	0.07	0.016	(0.060)	0.003	0.013
253	21.08	0.10	0.024	(0.060)	0.005	0.020
254	21.17	0.10	0.024	(0.060)	0.005	0.020
255	21.25	0.10	0.024	(0.059)	0.005	0.020
256	21.33	0.07	0.016	(0.059)	0.003	0.013
257	21.42	0.07	0.016	(0.059)	0.003	0.013
258	21.50	0.07	0.016	(0.059)	0.003	0.013
259	21.58	0.10	0.024	(0.059)	0.005	0.020
260	21.67	0.10	0.024	(0.058)	0.005	0.020
261	21.75	0.10	0.024	(0.058)	0.005	0.020
262	21.83	0.07	0.016	(0.058)	0.003	0.013
263	21.92	0.07	0.016	(0.058)	0.003	0.013
264	22.00	0.07	0.016	(0.058)	0.003	0.013
265	22.08	0.10	0.024	(0.057)	0.005	0.020
266	22.17	0.10	0.024	(0.057)	0.005	0.020
267	22.25	0.10	0.024	(0.057)	0.005	0.020
268	22.33	0.07	0.016	(0.057)	0.003	0.013
269	22.42	0.07	0.016	(0.057)	0.003	0.013
270	22.50	0.07	0.016	(0.057)	0.003	0.013
271	22.58	0.07	0.016	(0.056)	0.003	0.013
272	22.67	0.07	0.016	(0.056)	0.003	0.013
273	22.75	0.07	0.016	(0.056)	0.003	0.013
274	22.83	0.07	0.016	(0.056)	0.003	0.013
275	22.92	0.07	0.016	(0.056)	0.003	0.013
276	23.00	0.07	0.016	(0.056)	0.003	0.013
277	23.08	0.07	0.016	(0.055)	0.003	0.013
278	23.17	0.07	0.016	(0.055)	0.003	0.013
279	23.25	0.07	0.016	(0.055)	0.003	0.013
280	23.33	0.07	0.016	(0.055)	0.003	0.013

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281  23.42     0.07      0.016       (  0.055)       0.003        0.013
282  23.50     0.07      0.016       (  0.055)       0.003        0.013
283  23.58     0.07      0.016       (  0.055)       0.003        0.013
284  23.67     0.07      0.016       (  0.055)       0.003        0.013
285  23.75     0.07      0.016       (  0.055)       0.003        0.013
286  23.83     0.07      0.016       (  0.055)       0.003        0.013
287  23.92     0.07      0.016       (  0.055)       0.003        0.013
288  24.00     0.07      0.016       (  0.055)       0.003        0.013
                (Loss Rate Not Used)
    Sum =     100.0                                      Sum =    19.6
       Flood volume = Effective rainfall      1.63(In)
        times area      50.4(Ac.)/[(In)/(Ft.)] =       6.9(Ac.Ft)
       Total soil loss =      0.41(In)
       Total soil loss =     1.713(Ac.Ft)
       Total rainfall =      2.04(In)
       Flood volume =      298548.3 Cubic Feet
       Total soil loss =       74637.1 Cubic Feet
       ------------------------------------------------------------------------
        Peak flow rate of this hydrograph =     11.152(CFS)
       ------------------------------------------------------------------------
       ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                           24 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
       ------------------------------------------------------------------------
                   Hydrograph in   5   Minute intervals ((CFS))

       ------------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0        5.0      10.0      15.0      20.0
 ------------------------------------------------------------------------
   0+ 5       0.0005      0.08  Q         |         |         |         |
   0+10       0.0030      0.35  Q         |         |         |         |
   0+15       0.0064      0.50  Q         |         |         |         |
   0+20       0.0105      0.60  VQ        |         |         |         |
   0+25       0.0158      0.77  VQ        |         |         |         |
   0+30       0.0218      0.86  VQ        |         |         |         |
   0+35       0.0280      0.91  VQ        |         |         |         |
   0+40       0.0345      0.94  VQ        |         |         |         |
   0+45       0.0411      0.96  VQ        |         |         |         |
   0+50       0.0480      1.01  V Q       |         |         |         |
   0+55       0.0560      1.16  V Q       |         |         |         |
   1+ 0       0.0646      1.24  V Q       |         |         |         |
   1+ 5       0.0731      1.23  V Q       |         |         |         |
   1+10       0.0807      1.11  V Q       |         |         |         |
   1+15       0.0880      1.05  V Q       |         |         |         |
   1+20       0.0951      1.03  V Q       |         |         |         |
   1+25       0.1021      1.02  V Q       |         |         |         |
   1+30       0.1091      1.01  V Q       |         |         |         |
   1+35       0.1160      1.01  V Q       |         |         |         |
   1+40       0.1230      1.01  V Q       |         |         |         |
   1+45       0.1299      1.00  V Q       |         |         |         |
   1+50       0.1370      1.04  V Q       |         |         |         |
   1+55       0.1451      1.17  V Q       |         |         |         |
   2+ 0       0.1536      1.24  V Q       |         |         |         |
   2+ 5       0.1624      1.27  V Q       |         |         |         |
   2+10       0.1713      1.29  V Q       |         |         |         |
   2+15       0.1803      1.30  |VQ       |         |         |         |
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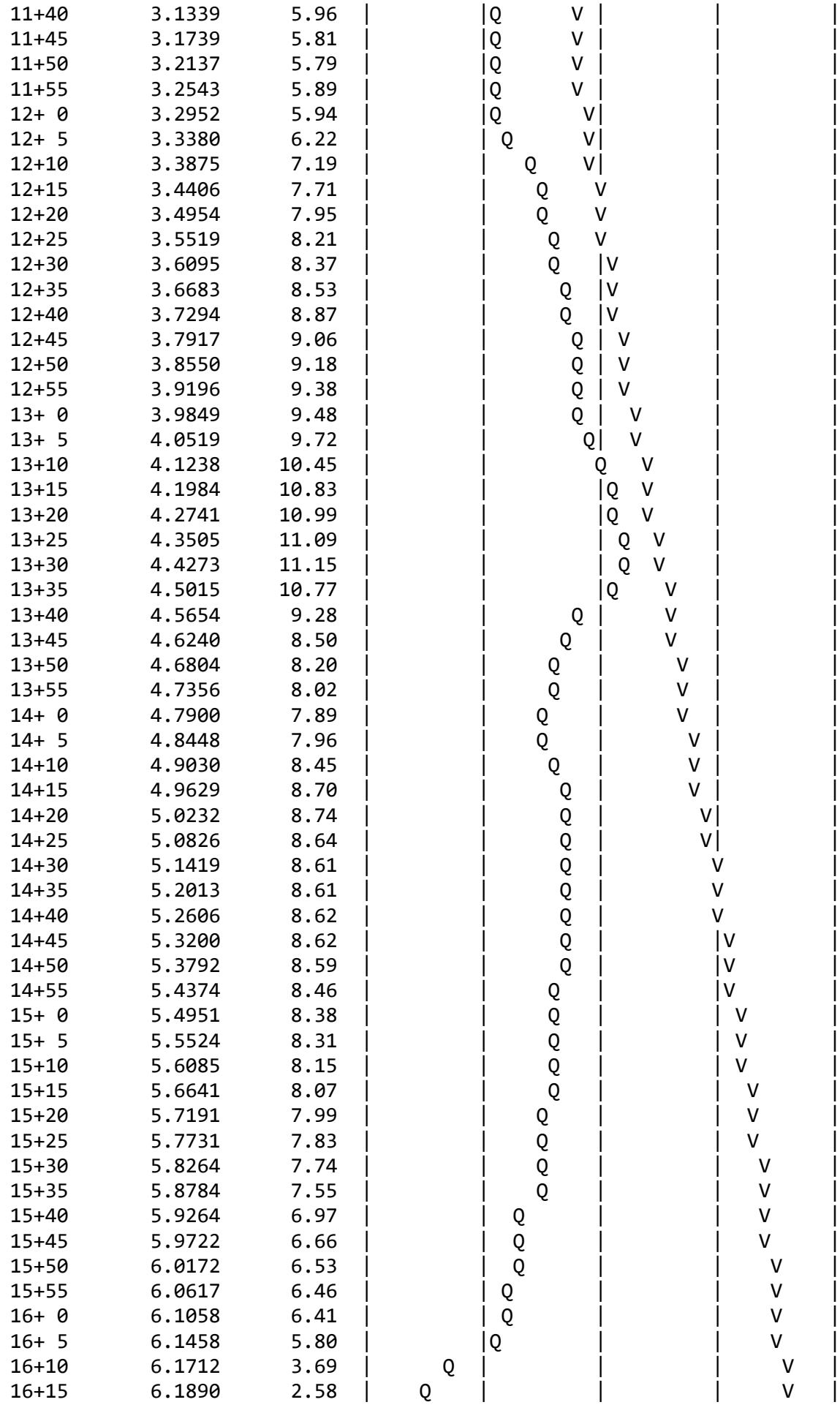
2+20	0.1893	1.31	VQ			
2+25	0.1984	1.32	VQ			
2+30	0.2075	1.32	VQ			
2+35	0.2169	1.36	VQ			
2+40	0.2272	1.50	V Q			
2+45	0.2381	1.58	V Q			
2+50	0.2491	1.61	V Q			
2+55	0.2603	1.62	V Q			
3+ 0	0.2716	1.63	V Q			
3+ 5	0.2829	1.64	V Q			
3+10	0.2942	1.65	V Q			
3+15	0.3056	1.65	V Q			
3+20	0.3170	1.66	V Q			
3+25	0.3284	1.66	V Q			
3+30	0.3398	1.66	V Q			
3+35	0.3513	1.66	VQ			
3+40	0.3627	1.66	VQ			
3+45	0.3741	1.66	VQ			
3+50	0.3858	1.70	VQ			
3+55	0.3984	1.84	VQ			
4+ 0	0.4116	1.91	VQ			
4+ 5	0.4249	1.94	VQ			
4+10	0.4384	1.95	VQ			
4+15	0.4519	1.97	VQ			
4+20	0.4658	2.01	V Q			
4+25	0.4806	2.16	V Q			
4+30	0.4960	2.23	V Q			
4+35	0.5116	2.27	V Q			
4+40	0.5274	2.29	VQ			
4+45	0.5432	2.30	VQ			
4+50	0.5593	2.34	VQ			
4+55	0.5765	2.49	VQ			
5+ 0	0.5941	2.57	V Q			
5+ 5	0.6115	2.52	V Q			
5+10	0.6271	2.26	VQ			
5+15	0.6418	2.13	VQ			
5+20	0.6564	2.12	VQ			
5+25	0.6717	2.23	VQ			
5+30	0.6874	2.28	Q			
5+35	0.7035	2.34	Q			
5+40	0.7206	2.48	Q			
5+45	0.7383	2.56	VQ			
5+50	0.7561	2.59	VQ			
5+55	0.7741	2.61	VQ			
6+ 0	0.7921	2.62	VQ			
6+ 5	0.8105	2.67	VQ			
6+10	0.8300	2.82	VQ			
6+15	0.8499	2.90	VQ			
6+20	0.8701	2.93	Q			
6+25	0.8904	2.95	Q			
6+30	0.9108	2.96	Q			
6+35	0.9315	3.01	VQ			
6+40	0.9532	3.15	VQ			
6+45	0.9755	3.23	VQ			
6+50	0.9979	3.26	VQ			
6+55	1.0205	3.28	VQ			

7+ 0	1.0432	3.29	Q				
7+ 5	1.0659	3.30	Q				
7+10	1.0887	3.31	Q				
7+15	1.1115	3.31	Q				
7+20	1.1346	3.35	Q				
7+25	1.1586	3.49	Q				
7+30	1.1832	3.57	VQ				
7+35	1.2082	3.63	Q				
7+40	1.2343	3.79	Q				
7+45	1.2610	3.87	Q				
7+50	1.2882	3.95	Q				
7+55	1.3165	4.11	VQ				
8+ 0	1.3455	4.20	VQ				
8+ 5	1.3752	4.32	Q				
8+10	1.4070	4.62	VQ				
8+15	1.4399	4.78	VQ				
8+20	1.4733	4.85	VQ				
8+25	1.5070	4.89	VQ				
8+30	1.5409	4.92	VQ				
8+35	1.5752	4.98	Q				
8+40	1.6106	5.13	VQ				
8+45	1.6465	5.21	VQ				
8+50	1.6829	5.29	VQ				
8+55	1.7204	5.45	Q				
9+ 0	1.7585	5.53	VQ				
9+ 5	1.7974	5.65	VQ				
9+10	1.8383	5.95	VQ				
9+15	1.8804	6.11	V Q				
9+20	1.9232	6.21	VQ				
9+25	1.9673	6.40	VQ				
9+30	2.0120	6.50	VQ				
9+35	2.0574	6.58	VQ				
9+40	2.1039	6.75	VQ				
9+45	2.1511	6.85	VQ				
9+50	2.1988	6.93	VQ				
9+55	2.2476	7.10	VQ				
10+ 0	2.2971	7.19	VQ				
10+ 5	2.3451	6.96	Q				
10+10	2.3865	6.01	QV				
10+15	2.4245	5.52	Q V				
10+20	2.4612	5.33	Q V				
10+25	2.4971	5.21	Q V				
10+30	2.5325	5.14	Q V				
10+35	2.5688	5.28	Q V				
10+40	2.6097	5.93	Q V				
10+45	2.6528	6.27	Q V				
10+50	2.6969	6.39	Q V				
10+55	2.7413	6.46	Q V				
11+ 0	2.7862	6.51	Q V				
11+ 5	2.8311	6.51	Q V				
11+10	2.8752	6.41	Q V				
11+15	2.9189	6.35	Q V				
11+20	2.9626	6.34	Q V				
11+25	3.0063	6.34	Q V				
11+30	3.0498	6.33	Q V				
11+35	3.0928	6.24	Q V				



16+20	6.2037	2.14	Q				V
16+25	6.2165	1.86	Q				V
16+30	6.2281	1.69	Q				V
16+35	6.2387	1.53	Q				V
16+40	6.2477	1.31	Q				V
16+45	6.2557	1.17	Q				V
16+50	6.2633	1.10	Q				V
16+55	6.2704	1.03	Q				V
17+ 0	6.2774	1.02	Q				V
17+ 5	6.2849	1.09	Q				V
17+10	6.2943	1.36	Q				V
17+15	6.3046	1.50	Q				V
17+20	6.3153	1.56	Q				V
17+25	6.3263	1.59	Q				V
17+30	6.3374	1.61	Q				V
17+35	6.3486	1.63	Q				V
17+40	6.3598	1.64	Q				V
17+45	6.3712	1.65	Q				V
17+50	6.3823	1.61	Q				V
17+55	6.3925	1.48	Q				V
18+ 0	6.4022	1.41	Q				V
18+ 5	6.4117	1.38	Q				V
18+10	6.4211	1.36	Q				V
18+15	6.4304	1.35	Q				V
18+20	6.4396	1.34	Q				V
18+25	6.4488	1.34	Q				V
18+30	6.4580	1.33	Q				V
18+35	6.4669	1.29	Q				V
18+40	6.4748	1.15	Q				V
18+45	6.4823	1.08	Q				V
18+50	6.4892	1.01	Q				V
18+55	6.4951	0.85	Q				V
19+ 0	6.5004	0.77	Q				V
19+ 5	6.5057	0.77	Q				V
19+10	6.5118	0.89	Q				V
19+15	6.5183	0.94	Q				V
19+20	6.5252	1.00	Q				V
19+25	6.5331	1.15	Q				V
19+30	6.5415	1.23	Q				V
19+35	6.5500	1.22	Q				V
19+40	6.5576	1.10	Q				V
19+45	6.5648	1.05	Q				V
19+50	6.5716	0.99	Q				V
19+55	6.5774	0.84	Q				V
20+ 0	6.5827	0.76	Q				V
20+ 5	6.5880	0.77	Q				V
20+10	6.5941	0.89	Q				V
20+15	6.6006	0.94	Q				V
20+20	6.6072	0.96	Q				V
20+25	6.6139	0.97	Q				V
20+30	6.6206	0.98	Q				V
20+35	6.6274	0.98	Q				V
20+40	6.6341	0.98	Q				V
20+45	6.6409	0.99	Q				V
20+50	6.6475	0.95	Q				V
20+55	6.6532	0.82	Q				V

21+ 0	6.6583	0.75	|Q	|	|	|	V |
21+ 5	6.6635	0.75	|Q	|	|	|	V |
21+10	6.6695	0.88	|Q	|	|	|	V |
21+15	6.6760	0.94	|Q	|	|	|	V |
21+20	6.6823	0.92	|Q	|	|	|	V |
21+25	6.6878	0.79	|Q	|	|	|	V|
21+30	6.6928	0.73	|Q	|	|	|	V|
21+35	6.6979	0.74	|Q	|	|	|	V|
21+40	6.7039	0.87	|Q	|	|	|	V|
21+45	6.7103	0.93	|Q	|	|	|	V|
21+50	6.7166	0.92	|Q	|	|	|	V|
21+55	6.7220	0.79	|Q	|	|	|	V|
22+ 0	6.7271	0.73	|Q	|	|	|	V|
22+ 5	6.7322	0.74	|Q	|	|	|	V|
22+10	6.7381	0.87	|Q	|	|	|	V|
22+15	6.7445	0.93	|Q	|	|	|	V|
22+20	6.7508	0.92	|Q	|	|	|	V|
22+25	6.7563	0.79	|Q	|	|	|	V|
22+30	6.7613	0.73	|Q	|	|	|	V|
22+35	6.7662	0.70	|Q	|	|	|	V|
22+40	6.7709	0.69	|Q	|	|	|	V|
22+45	6.7756	0.68	|Q	|	|	|	V|
22+50	6.7803	0.68	|Q	|	|	|	V|
22+55	6.7849	0.67	|Q	|	|	|	V|
23+ 0	6.7895	0.67	|Q	|	|	|	V|
23+ 5	6.7941	0.67	|Q	|	|	|	V|
23+10	6.7987	0.66	|Q	|	|	|	V|
23+15	6.8032	0.66	|Q	|	|	|	V|
23+20	6.8078	0.66	|Q	|	|	|	V|
23+25	6.8124	0.66	|Q	|	|	|	V|
23+30	6.8169	0.66	|Q	|	|	|	V|
23+35	6.8215	0.66	|Q	|	|	|	V|
23+40	6.8261	0.66	|Q	|	|	|	V|
23+45	6.8307	0.66	|Q	|	|	|	V|
23+50	6.8352	0.66	|Q	|	|	|	V|
23+55	6.8398	0.66	|Q	|	|	|	V|
24+ 0	6.8444	0.66	|Q	|	|	|	V|
24+ 5	6.8484	0.59	|Q	|	|	|	V|
24+10	6.8505	0.31	Q	|	|	|	V|
24+15	6.8517	0.16	Q	|	|	|	V|
24+20	6.8524	0.11	Q	|	|	|	V|
24+25	6.8529	0.07	Q	|	|	|	V|
24+30	6.8532	0.05	Q	|	|	|	V|
24+35	6.8534	0.03	Q	|	|	|	V|
24+40	6.8536	0.02	Q	|	|	|	V|
24+45	6.8537	0.01	Q	|	|	|	V|
24+50	6.8537	0.01	Q	|	|	|	V|

U n i t H y d r o g r a p h A n a l y s i s

Study date 05/03/21 File: ONSITEPROP242.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 4010

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

20-0026 - MENIFEE COMMERCE CENTER
ONSITE UNIT HYDROGRAPH ANALYSIS
PROPOSED CONDITION, 2-YEAR 24-HOUR: BUILDING 2
FN: ONSITEPROP242.OUT- TSW

Drainage Area = 20.00(Ac.) = 0.031 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 20.00(Ac.) = 0.031 Sq. Mi.
Length along longest watercourse = 1842.00(Ft.)
Length along longest watercourse measured to centroid = 967.00(Ft.)
Length along longest watercourse = 0.349 Mi.
Length along longest watercourse measured to centroid = 0.183 Mi.
Difference in elevation = 12.70(Ft.)
Slope along watercourse = 36.4039 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.064 Hr.
Lag time = 3.84 Min.
25% of lag time = 0.96 Min.
40% of lag time = 1.53 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
20.00	2.04	40.80

100 YEAR Area rainfall data:

```
Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       20.00            5.33                 106.60

STORM EVENT (YEAR) =    2.00
Area Averaged 2-Year Rainfall =    2.040(In)
Area Averaged 100-Year Rainfall =    5.330(In)

Point rain (area averaged) =    2.040(In)
Areal adjustment factor =  100.00 %
Adjusted average point rain =    2.040(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
    20.000           69.00         0.900
 Total Area Entered =     20.00(Ac.)


RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
AMC2 AMC-1     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
69.0  49.8      0.574     0.900        0.109       1.000      0.109
                                                 Sum (F) =   0.109
Area averaged mean soil loss (F) (In/Hr) =  0.109
Minimum soil loss rate ((In/Hr)) =  0.055
(for 24 hour storm duration)
Soil low loss rate (decimal) =   0.900
------------------------------------------------------------------------

               U n i t  H y d r o g r a p h
                       VALLEY S-Curve
------------------------------------------------------------------------
               Unit Hydrograph Data
------------------------------------------------------------------------
Unit time period   Time % of lag   Distribution   Unit Hydrograph
    (hrs)                          Graph %            (CFS)
------------------------------------------------------------------------
    1   0.083        130.336         28.113              5.667
    2   0.167        260.672         48.274              9.730
    3   0.250        391.008         12.476              2.515
    4   0.333        521.344          5.578              1.124
    5   0.417        651.679          3.063              0.617
    6   0.500        782.015          1.665              0.336
    7   0.583        912.351          0.832              0.168
                                Sum = 100.000   Sum=      20.156
------------------------------------------------------------------------

 The following loss rate calculations reflect use of the minimum calculated loss
 rate subtracted from the Storm Rain to produce the maximum Effective Rain value

  Unit Time   Pattern   Storm Rain     Loss rate(In./Hr)     Effective
       (Hr.)  Percent   (In/Hr)         Max   |   Low        (In/Hr)
   1   0.08     0.07      0.016       (  0.193)       0.015        0.002
   2   0.17     0.07      0.016       (  0.193)       0.015        0.002
   3   0.25     0.07      0.016       (  0.192)       0.015        0.002
   4   0.33     0.10      0.024       (  0.191)       0.022        0.002
```

5	0.42	0.10	0.024	(0.190)	0.022	0.002
6	0.50	0.10	0.024	(0.190)	0.022	0.002
7	0.58	0.10	0.024	(0.189)	0.022	0.002
8	0.67	0.10	0.024	(0.188)	0.022	0.002
9	0.75	0.10	0.024	(0.187)	0.022	0.002
10	0.83	0.13	0.033	(0.187)	0.029	0.003
11	0.92	0.13	0.033	(0.186)	0.029	0.003
12	1.00	0.13	0.033	(0.185)	0.029	0.003
13	1.08	0.10	0.024	(0.184)	0.022	0.002
14	1.17	0.10	0.024	(0.184)	0.022	0.002
15	1.25	0.10	0.024	(0.183)	0.022	0.002
16	1.33	0.10	0.024	(0.182)	0.022	0.002
17	1.42	0.10	0.024	(0.182)	0.022	0.002
18	1.50	0.10	0.024	(0.181)	0.022	0.002
19	1.58	0.10	0.024	(0.180)	0.022	0.002
20	1.67	0.10	0.024	(0.179)	0.022	0.002
21	1.75	0.10	0.024	(0.179)	0.022	0.002
22	1.83	0.13	0.033	(0.178)	0.029	0.003
23	1.92	0.13	0.033	(0.177)	0.029	0.003
24	2.00	0.13	0.033	(0.176)	0.029	0.003
25	2.08	0.13	0.033	(0.176)	0.029	0.003
26	2.17	0.13	0.033	(0.175)	0.029	0.003
27	2.25	0.13	0.033	(0.174)	0.029	0.003
28	2.33	0.13	0.033	(0.174)	0.029	0.003
29	2.42	0.13	0.033	(0.173)	0.029	0.003
30	2.50	0.13	0.033	(0.172)	0.029	0.003
31	2.58	0.17	0.041	(0.172)	0.037	0.004
32	2.67	0.17	0.041	(0.171)	0.037	0.004
33	2.75	0.17	0.041	(0.170)	0.037	0.004
34	2.83	0.17	0.041	(0.169)	0.037	0.004
35	2.92	0.17	0.041	(0.169)	0.037	0.004
36	3.00	0.17	0.041	(0.168)	0.037	0.004
37	3.08	0.17	0.041	(0.167)	0.037	0.004
38	3.17	0.17	0.041	(0.167)	0.037	0.004
39	3.25	0.17	0.041	(0.166)	0.037	0.004
40	3.33	0.17	0.041	(0.165)	0.037	0.004
41	3.42	0.17	0.041	(0.165)	0.037	0.004
42	3.50	0.17	0.041	(0.164)	0.037	0.004
43	3.58	0.17	0.041	(0.163)	0.037	0.004
44	3.67	0.17	0.041	(0.162)	0.037	0.004
45	3.75	0.17	0.041	(0.162)	0.037	0.004
46	3.83	0.20	0.049	(0.161)	0.044	0.005
47	3.92	0.20	0.049	(0.160)	0.044	0.005
48	4.00	0.20	0.049	(0.160)	0.044	0.005
49	4.08	0.20	0.049	(0.159)	0.044	0.005
50	4.17	0.20	0.049	(0.158)	0.044	0.005
51	4.25	0.20	0.049	(0.158)	0.044	0.005
52	4.33	0.23	0.057	(0.157)	0.051	0.006
53	4.42	0.23	0.057	(0.156)	0.051	0.006
54	4.50	0.23	0.057	(0.156)	0.051	0.006
55	4.58	0.23	0.057	(0.155)	0.051	0.006
56	4.67	0.23	0.057	(0.154)	0.051	0.006
57	4.75	0.23	0.057	(0.154)	0.051	0.006
58	4.83	0.27	0.065	(0.153)	0.059	0.007
59	4.92	0.27	0.065	(0.152)	0.059	0.007
60	5.00	0.27	0.065	(0.152)	0.059	0.007

61	5.08	0.20	0.049	(0.151)	0.044	0.005
62	5.17	0.20	0.049	(0.150)	0.044	0.005
63	5.25	0.20	0.049	(0.150)	0.044	0.005
64	5.33	0.23	0.057	(0.149)	0.051	0.006
65	5.42	0.23	0.057	(0.148)	0.051	0.006
66	5.50	0.23	0.057	(0.148)	0.051	0.006
67	5.58	0.27	0.065	(0.147)	0.059	0.007
68	5.67	0.27	0.065	(0.147)	0.059	0.007
69	5.75	0.27	0.065	(0.146)	0.059	0.007
70	5.83	0.27	0.065	(0.145)	0.059	0.007
71	5.92	0.27	0.065	(0.145)	0.059	0.007
72	6.00	0.27	0.065	(0.144)	0.059	0.007
73	6.08	0.30	0.073	(0.143)	0.066	0.007
74	6.17	0.30	0.073	(0.143)	0.066	0.007
75	6.25	0.30	0.073	(0.142)	0.066	0.007
76	6.33	0.30	0.073	(0.141)	0.066	0.007
77	6.42	0.30	0.073	(0.141)	0.066	0.007
78	6.50	0.30	0.073	(0.140)	0.066	0.007
79	6.58	0.33	0.082	(0.140)	0.073	0.008
80	6.67	0.33	0.082	(0.139)	0.073	0.008
81	6.75	0.33	0.082	(0.138)	0.073	0.008
82	6.83	0.33	0.082	(0.138)	0.073	0.008
83	6.92	0.33	0.082	(0.137)	0.073	0.008
84	7.00	0.33	0.082	(0.136)	0.073	0.008
85	7.08	0.33	0.082	(0.136)	0.073	0.008
86	7.17	0.33	0.082	(0.135)	0.073	0.008
87	7.25	0.33	0.082	(0.135)	0.073	0.008
88	7.33	0.37	0.090	(0.134)	0.081	0.009
89	7.42	0.37	0.090	(0.133)	0.081	0.009
90	7.50	0.37	0.090	(0.133)	0.081	0.009
91	7.58	0.40	0.098	(0.132)	0.088	0.010
92	7.67	0.40	0.098	(0.131)	0.088	0.010
93	7.75	0.40	0.098	(0.131)	0.088	0.010
94	7.83	0.43	0.106	(0.130)	0.095	0.011
95	7.92	0.43	0.106	(0.130)	0.095	0.011
96	8.00	0.43	0.106	(0.129)	0.095	0.011
97	8.08	0.50	0.122	(0.128)	0.110	0.012
98	8.17	0.50	0.122	(0.128)	0.110	0.012
99	8.25	0.50	0.122	(0.127)	0.110	0.012
100	8.33	0.50	0.122	(0.127)	0.110	0.012
101	8.42	0.50	0.122	(0.126)	0.110	0.012
102	8.50	0.50	0.122	(0.125)	0.110	0.012
103	8.58	0.53	0.131	(0.125)	0.117	0.013
104	8.67	0.53	0.131	(0.124)	0.117	0.013
105	8.75	0.53	0.131	(0.124)	0.117	0.013
106	8.83	0.57	0.139	0.123	(0.125)	0.016
107	8.92	0.57	0.139	0.123	(0.125)	0.016
108	9.00	0.57	0.139	0.122	(0.125)	0.017
109	9.08	0.63	0.155	0.121	(0.140)	0.034
110	9.17	0.63	0.155	0.121	(0.140)	0.034
111	9.25	0.63	0.155	0.120	(0.140)	0.035
112	9.33	0.67	0.163	0.120	(0.147)	0.044
113	9.42	0.67	0.163	0.119	(0.147)	0.044
114	9.50	0.67	0.163	0.119	(0.147)	0.045
115	9.58	0.70	0.171	0.118	(0.154)	0.053
116	9.67	0.70	0.171	0.117	(0.154)	0.054

117	9.75	0.70	0.171		0.117	(0.154)	0.055
118	9.83	0.73	0.180		0.116	(0.162)	0.063
119	9.92	0.73	0.180		0.116	(0.162)	0.064
120	10.00	0.73	0.180		0.115	(0.162)	0.064
121	10.08	0.50	0.122	(0.115)		0.110	0.012
122	10.17	0.50	0.122	(0.114)		0.110	0.012
123	10.25	0.50	0.122	(0.113)		0.110	0.012
124	10.33	0.50	0.122	(0.113)		0.110	0.012
125	10.42	0.50	0.122	(0.112)		0.110	0.012
126	10.50	0.50	0.122	(0.112)		0.110	0.012
127	10.58	0.67	0.163		0.111	(0.147)	0.052
128	10.67	0.67	0.163		0.111	(0.147)	0.052
129	10.75	0.67	0.163		0.110	(0.147)	0.053
130	10.83	0.67	0.163		0.110	(0.147)	0.054
131	10.92	0.67	0.163		0.109	(0.147)	0.054
132	11.00	0.67	0.163		0.109	(0.147)	0.055
133	11.08	0.63	0.155		0.108	(0.140)	0.047
134	11.17	0.63	0.155		0.108	(0.140)	0.048
135	11.25	0.63	0.155		0.107	(0.140)	0.048
136	11.33	0.63	0.155		0.106	(0.140)	0.049
137	11.42	0.63	0.155		0.106	(0.140)	0.049
138	11.50	0.63	0.155		0.105	(0.140)	0.050
139	11.58	0.57	0.139		0.105	(0.125)	0.034
140	11.67	0.57	0.139		0.104	(0.125)	0.034
141	11.75	0.57	0.139		0.104	(0.125)	0.035
142	11.83	0.60	0.147		0.103	(0.132)	0.044
143	11.92	0.60	0.147		0.103	(0.132)	0.044
144	12.00	0.60	0.147		0.102	(0.132)	0.045
145	12.08	0.83	0.204		0.102	(0.184)	0.102
146	12.17	0.83	0.204		0.101	(0.184)	0.103
147	12.25	0.83	0.204		0.101	(0.184)	0.103
148	12.33	0.87	0.212		0.100	(0.191)	0.112
149	12.42	0.87	0.212		0.100	(0.191)	0.112
150	12.50	0.87	0.212		0.099	(0.191)	0.113
151	12.58	0.93	0.228		0.099	(0.206)	0.130
152	12.67	0.93	0.228		0.098	(0.206)	0.130
153	12.75	0.93	0.228		0.098	(0.206)	0.131
154	12.83	0.97	0.237		0.097	(0.213)	0.139
155	12.92	0.97	0.237		0.097	(0.213)	0.140
156	13.00	0.97	0.237		0.096	(0.213)	0.140
157	13.08	1.13	0.277		0.096	(0.250)	0.182
158	13.17	1.13	0.277		0.095	(0.250)	0.182
159	13.25	1.13	0.277		0.095	(0.250)	0.183
160	13.33	1.13	0.277		0.094	(0.250)	0.183
161	13.42	1.13	0.277		0.094	(0.250)	0.184
162	13.50	1.13	0.277		0.093	(0.250)	0.184
163	13.58	0.77	0.188		0.093	(0.169)	0.095
164	13.67	0.77	0.188		0.092	(0.169)	0.095
165	13.75	0.77	0.188		0.092	(0.169)	0.096
166	13.83	0.77	0.188		0.092	(0.169)	0.096
167	13.92	0.77	0.188		0.091	(0.169)	0.097
168	14.00	0.77	0.188		0.091	(0.169)	0.097
169	14.08	0.90	0.220		0.090	(0.198)	0.130
170	14.17	0.90	0.220		0.090	(0.198)	0.131
171	14.25	0.90	0.220		0.089	(0.198)	0.131
172	14.33	0.87	0.212		0.089	(0.191)	0.123

173	14.42	0.87	0.212		0.088	(0.191)	0.124
174	14.50	0.87	0.212		0.088	(0.191)	0.124
175	14.58	0.87	0.212		0.087	(0.191)	0.125
176	14.67	0.87	0.212		0.087	(0.191)	0.125
177	14.75	0.87	0.212		0.086	(0.191)	0.126
178	14.83	0.83	0.204		0.086	(0.184)	0.118
179	14.92	0.83	0.204		0.086	(0.184)	0.118
180	15.00	0.83	0.204		0.085	(0.184)	0.119
181	15.08	0.80	0.196		0.085	(0.176)	0.111
182	15.17	0.80	0.196		0.084	(0.176)	0.112
183	15.25	0.80	0.196		0.084	(0.176)	0.112
184	15.33	0.77	0.188		0.083	(0.169)	0.104
185	15.42	0.77	0.188		0.083	(0.169)	0.105
186	15.50	0.77	0.188		0.083	(0.169)	0.105
187	15.58	0.63	0.155		0.082	(0.140)	0.073
188	15.67	0.63	0.155		0.082	(0.140)	0.073
189	15.75	0.63	0.155		0.081	(0.140)	0.074
190	15.83	0.63	0.155		0.081	(0.140)	0.074
191	15.92	0.63	0.155		0.080	(0.140)	0.075
192	16.00	0.63	0.155		0.080	(0.140)	0.075
193	16.08	0.13	0.033	(0.080)		0.029	0.003
194	16.17	0.13	0.033	(0.079)		0.029	0.003
195	16.25	0.13	0.033	(0.079)		0.029	0.003
196	16.33	0.13	0.033	(0.078)		0.029	0.003
197	16.42	0.13	0.033	(0.078)		0.029	0.003
198	16.50	0.13	0.033	(0.078)		0.029	0.003
199	16.58	0.10	0.024	(0.077)		0.022	0.002
200	16.67	0.10	0.024	(0.077)		0.022	0.002
201	16.75	0.10	0.024	(0.076)		0.022	0.002
202	16.83	0.10	0.024	(0.076)		0.022	0.002
203	16.92	0.10	0.024	(0.076)		0.022	0.002
204	17.00	0.10	0.024	(0.075)		0.022	0.002
205	17.08	0.17	0.041	(0.075)		0.037	0.004
206	17.17	0.17	0.041	(0.075)		0.037	0.004
207	17.25	0.17	0.041	(0.074)		0.037	0.004
208	17.33	0.17	0.041	(0.074)		0.037	0.004
209	17.42	0.17	0.041	(0.073)		0.037	0.004
210	17.50	0.17	0.041	(0.073)		0.037	0.004
211	17.58	0.17	0.041	(0.073)		0.037	0.004
212	17.67	0.17	0.041	(0.072)		0.037	0.004
213	17.75	0.17	0.041	(0.072)		0.037	0.004
214	17.83	0.13	0.033	(0.072)		0.029	0.003
215	17.92	0.13	0.033	(0.071)		0.029	0.003
216	18.00	0.13	0.033	(0.071)		0.029	0.003
217	18.08	0.13	0.033	(0.071)		0.029	0.003
218	18.17	0.13	0.033	(0.070)		0.029	0.003
219	18.25	0.13	0.033	(0.070)		0.029	0.003
220	18.33	0.13	0.033	(0.070)		0.029	0.003
221	18.42	0.13	0.033	(0.069)		0.029	0.003
222	18.50	0.13	0.033	(0.069)		0.029	0.003
223	18.58	0.10	0.024	(0.069)		0.022	0.002
224	18.67	0.10	0.024	(0.068)		0.022	0.002
225	18.75	0.10	0.024	(0.068)		0.022	0.002
226	18.83	0.07	0.016	(0.068)		0.015	0.002
227	18.92	0.07	0.016	(0.067)		0.015	0.002
228	19.00	0.07	0.016	(0.067)		0.015	0.002

229	19.08	0.10	0.024	(0.067)	0.022	0.002
230	19.17	0.10	0.024	(0.066)	0.022	0.002
231	19.25	0.10	0.024	(0.066)	0.022	0.002
232	19.33	0.13	0.033	(0.066)	0.029	0.003
233	19.42	0.13	0.033	(0.065)	0.029	0.003
234	19.50	0.13	0.033	(0.065)	0.029	0.003
235	19.58	0.10	0.024	(0.065)	0.022	0.002
236	19.67	0.10	0.024	(0.064)	0.022	0.002
237	19.75	0.10	0.024	(0.064)	0.022	0.002
238	19.83	0.07	0.016	(0.064)	0.015	0.002
239	19.92	0.07	0.016	(0.064)	0.015	0.002
240	20.00	0.07	0.016	(0.063)	0.015	0.002
241	20.08	0.10	0.024	(0.063)	0.022	0.002
242	20.17	0.10	0.024	(0.063)	0.022	0.002
243	20.25	0.10	0.024	(0.062)	0.022	0.002
244	20.33	0.10	0.024	(0.062)	0.022	0.002
245	20.42	0.10	0.024	(0.062)	0.022	0.002
246	20.50	0.10	0.024	(0.062)	0.022	0.002
247	20.58	0.10	0.024	(0.061)	0.022	0.002
248	20.67	0.10	0.024	(0.061)	0.022	0.002
249	20.75	0.10	0.024	(0.061)	0.022	0.002
250	20.83	0.07	0.016	(0.061)	0.015	0.002
251	20.92	0.07	0.016	(0.060)	0.015	0.002
252	21.00	0.07	0.016	(0.060)	0.015	0.002
253	21.08	0.10	0.024	(0.060)	0.022	0.002
254	21.17	0.10	0.024	(0.060)	0.022	0.002
255	21.25	0.10	0.024	(0.059)	0.022	0.002
256	21.33	0.07	0.016	(0.059)	0.015	0.002
257	21.42	0.07	0.016	(0.059)	0.015	0.002
258	21.50	0.07	0.016	(0.059)	0.015	0.002
259	21.58	0.10	0.024	(0.059)	0.022	0.002
260	21.67	0.10	0.024	(0.058)	0.022	0.002
261	21.75	0.10	0.024	(0.058)	0.022	0.002
262	21.83	0.07	0.016	(0.058)	0.015	0.002
263	21.92	0.07	0.016	(0.058)	0.015	0.002
264	22.00	0.07	0.016	(0.058)	0.015	0.002
265	22.08	0.10	0.024	(0.057)	0.022	0.002
266	22.17	0.10	0.024	(0.057)	0.022	0.002
267	22.25	0.10	0.024	(0.057)	0.022	0.002
268	22.33	0.07	0.016	(0.057)	0.015	0.002
269	22.42	0.07	0.016	(0.057)	0.015	0.002
270	22.50	0.07	0.016	(0.057)	0.015	0.002
271	22.58	0.07	0.016	(0.056)	0.015	0.002
272	22.67	0.07	0.016	(0.056)	0.015	0.002
273	22.75	0.07	0.016	(0.056)	0.015	0.002
274	22.83	0.07	0.016	(0.056)	0.015	0.002
275	22.92	0.07	0.016	(0.056)	0.015	0.002
276	23.00	0.07	0.016	(0.056)	0.015	0.002
277	23.08	0.07	0.016	(0.055)	0.015	0.002
278	23.17	0.07	0.016	(0.055)	0.015	0.002
279	23.25	0.07	0.016	(0.055)	0.015	0.002
280	23.33	0.07	0.016	(0.055)	0.015	0.002
281	23.42	0.07	0.016	(0.055)	0.015	0.002
282	23.50	0.07	0.016	(0.055)	0.015	0.002
283	23.58	0.07	0.016	(0.055)	0.015	0.002
284	23.67	0.07	0.016	(0.055)	0.015	0.002

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285  23.75     0.07      0.016       (  0.055)       0.015        0.002
286  23.83     0.07      0.016       (  0.055)       0.015        0.002
287  23.92     0.07      0.016       (  0.055)       0.015        0.002
288  24.00     0.07      0.016       (  0.055)       0.015        0.002
               (Loss Rate Not Used)
    Sum =     100.0                                    Sum =     8.1
       Flood volume = Effective rainfall      0.68(In)
        times area      20.0(Ac.)/[(In)/(Ft.)] =       1.1(Ac.Ft)
       Total soil loss =      1.36(In)
       Total soil loss =     2.272(Ac.Ft)
       Total rainfall =      2.04(In)
       Flood volume =       49113.8 Cubic Feet
       Total soil loss =       98984.4 Cubic Feet
       ---------------------------------------------------------------------
        Peak flow rate of this hydrograph =      3.693(CFS)
       ---------------------------------------------------------------------
       +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                           24 - H O U R    S T O R M
                      R u n o f f      H y d r o g r a p h
       ---------------------------------------------------------------------
                   Hydrograph in   5   Minute intervals ((CFS))

       ---------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
 ---------------------------------------------------------------------------
   0+ 5       0.0001      0.01  Q         |         |         |         |
   0+10       0.0002      0.03  Q         |         |         |         |
   0+15       0.0004      0.03  Q         |         |         |         |
   0+20       0.0007      0.04  Q         |         |         |         |
   0+25       0.0010      0.04  Q         |         |         |         |
   0+30       0.0013      0.05  Q         |         |         |         |
   0+35       0.0017      0.05  Q         |         |         |         |
   0+40       0.0020      0.05  Q         |         |         |         |
   0+45       0.0023      0.05  Q         |         |         |         |
   0+50       0.0027      0.05  Q         |         |         |         |
   0+55       0.0031      0.06  Q         |         |         |         |
   1+ 0       0.0036      0.06  Q         |         |         |         |
   1+ 5       0.0040      0.06  Q         |         |         |         |
   1+10       0.0043      0.05  Q         |         |         |         |
   1+15       0.0047      0.05  Q         |         |         |         |
   1+20       0.0050      0.05  Q         |         |         |         |
   1+25       0.0054      0.05  Q         |         |         |         |
   1+30       0.0057      0.05  Q         |         |         |         |
   1+35       0.0061      0.05  Q         |         |         |         |
   1+40       0.0064      0.05  Q         |         |         |         |
   1+45       0.0067      0.05  Q         |         |         |         |
   1+50       0.0071      0.05  Q         |         |         |         |
   1+55       0.0075      0.06  Q         |         |         |         |
   2+ 0       0.0080      0.06  Q         |         |         |         |
   2+ 5       0.0084      0.06  Q         |         |         |         |
   2+10       0.0089      0.07  Q         |         |         |         |
   2+15       0.0093      0.07  Q         |         |         |         |
   2+20       0.0098      0.07  Q         |         |         |         |
   2+25       0.0102      0.07  Q         |         |         |         |
   2+30       0.0107      0.07  Q         |         |         |         |
   2+35       0.0112      0.07  Q         |         |         |         |
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2+40	0.0117	0.08	Q				
2+45	0.0123	0.08	Q				
2+50	0.0128	0.08	Q				
2+55	0.0134	0.08	Q				
3+ 0	0.0140	0.08	Q				
3+ 5	0.0145	0.08	Q				
3+10	0.0151	0.08	Q				
3+15	0.0157	0.08	Q				
3+20	0.0162	0.08	Q				
3+25	0.0168	0.08	Q				
3+30	0.0174	0.08	Q				
3+35	0.0179	0.08	Q				
3+40	0.0185	0.08	Q				
3+45	0.0191	0.08	Q				
3+50	0.0197	0.09	Q				
3+55	0.0203	0.09	Q				
4+ 0	0.0210	0.10	Q				
4+ 5	0.0217	0.10	Q				
4+10	0.0223	0.10	Q				
4+15	0.0230	0.10	Q				
4+20	0.0237	0.10	Q				
4+25	0.0245	0.11	Q				
4+30	0.0253	0.11	Q				
4+35	0.0261	0.11	Q				
4+40	0.0269	0.11	Q				
4+45	0.0276	0.12	Q				
4+50	0.0285	0.12	QV				
4+55	0.0293	0.13	QV				
5+ 0	0.0302	0.13	QV				
5+ 5	0.0311	0.12	QV				
5+10	0.0318	0.11	QV				
5+15	0.0325	0.10	QV				
5+20	0.0332	0.11	QV				
5+25	0.0340	0.11	QV				
5+30	0.0348	0.11	QV				
5+35	0.0356	0.12	QV				
5+40	0.0365	0.13	QV				
5+45	0.0374	0.13	QV				
5+50	0.0383	0.13	QV				
5+55	0.0392	0.13	QV				
6+ 0	0.0401	0.13	QV				
6+ 5	0.0410	0.14	QV				
6+10	0.0420	0.14	QV				
6+15	0.0430	0.15	QV				
6+20	0.0440	0.15	QV				
6+25	0.0451	0.15	QV				
6+30	0.0461	0.15	QV				
6+35	0.0471	0.15	QV				
6+40	0.0482	0.16	QV				
6+45	0.0494	0.16	QV				
6+50	0.0505	0.16	QV				
6+55	0.0516	0.16	QV				
7+ 0	0.0527	0.16	QV				
7+ 5	0.0539	0.16	QV				
7+10	0.0550	0.16	QV				
7+15	0.0561	0.16	QV				

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 7+20       0.0573      0.17  Q V       |         |         |         |
 7+25       0.0585      0.18  Q V       |         |         |         |
 7+30       0.0598      0.18  Q V       |         |         |         |
 7+35       0.0610      0.18  Q V       |         |         |         |
 7+40       0.0624      0.19  Q V       |         |         |         |
 7+45       0.0637      0.20  Q V       |         |         |         |
 7+50       0.0651      0.20  Q V       |         |         |         |
 7+55       0.0665      0.21  Q V       |         |         |         |
 8+ 0       0.0680      0.21  Q V       |         |         |         |
 8+ 5       0.0695      0.22  Q V       |         |         |         |
 8+10       0.0712      0.24  Q V       |         |         |         |
 8+15       0.0729      0.24  Q V       |         |         |         |
 8+20       0.0745      0.25  Q V       |         |         |         |
 8+25       0.0762      0.25  Q V       |         |         |         |
 8+30       0.0779      0.25  Q V       |         |         |         |
 8+35       0.0797      0.25  |QV       |         |         |         |
 8+40       0.0815      0.26  |QV       |         |         |         |
 8+45       0.0833      0.26  |QV       |         |         |         |
 8+50       0.0852      0.28  |Q V       |         |         |         |
 8+55       0.0873      0.30  |Q V       |         |         |         |
 9+ 0       0.0895      0.32  |Q V       |         |         |         |
 9+ 5       0.0924      0.43  |Q V       |         |         |         |
 9+10       0.0965      0.60  | QV       |         |         |         |
 9+15       0.1010      0.65  | QV       |         |         |         |
 9+20       0.1060      0.73  | QV       |         |         |         |
 9+25       0.1117      0.83  |  Q       |         |         |         |
 9+30       0.1177      0.87  |  QV      |         |         |         |
 9+35       0.1241      0.94  |  QV      |         |         |         |
 9+40       0.1312      1.03  |   Q      |         |         |         |
 9+45       0.1386      1.07  |   Q      |         |         |         |
 9+50       0.1464      1.13  |   QV     |         |         |         |
 9+55       0.1549      1.23  |   QV     |         |         |         |
10+ 0       0.1636      1.27  |    Q     |         |         |         |
10+ 5       0.1704      0.99  |  Q  V    |         |         |         |
10+10       0.1738      0.49  |Q    V    |         |         |         |
10+15       0.1762      0.36  |Q    V    |         |         |         |
10+20       0.1783      0.30  |Q    V    |         |         |         |
10+25       0.1802      0.27  |Q    V    |         |         |         |
10+30       0.1820      0.26  |Q    V    |         |         |         |
10+35       0.1852      0.47  |Q    V    |         |         |         |
10+40       0.1912      0.86  |  Q  V    |         |         |         |
10+45       0.1978      0.97  |  Q   V   |         |         |         |
10+50       0.2049      1.02  |   Q  V   |         |         |         |
10+55       0.2122      1.06  |   Q  V   |         |         |         |
11+ 0       0.2196      1.08  |   Q  V   |         |         |         |
11+ 5       0.2269      1.05  |   Q   V  |         |         |         |
11+10       0.2336      0.98  |  Q    V  |         |         |         |
11+15       0.2404      0.97  |  Q    V  |         |         |         |
11+20       0.2471      0.98  |  Q    V  |         |         |         |
11+25       0.2538      0.98  |  Q     V|         |         |         |
11+30       0.2607      0.99  |  Q     V|         |         |         |
11+35       0.2669      0.91  |  Q     V|         |         |         |
11+40       0.2721      0.76  |  Q     V|         |         |         |
11+45       0.2771      0.73  | Q      V|         |         |         |
11+50       0.2824      0.77  |  Q      V         |         |         |
11+55       0.2882      0.85  |  Q      V         |         |         |
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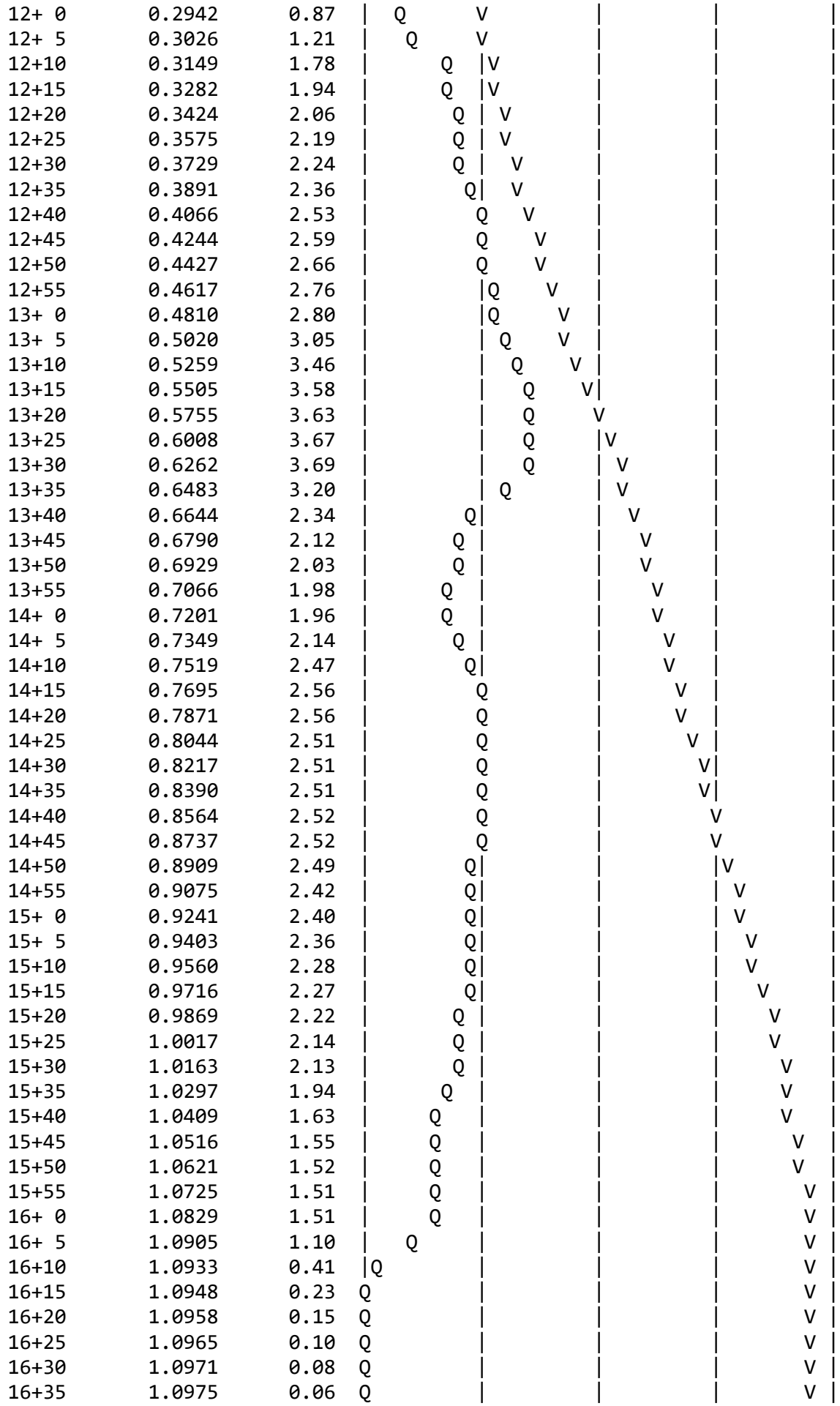
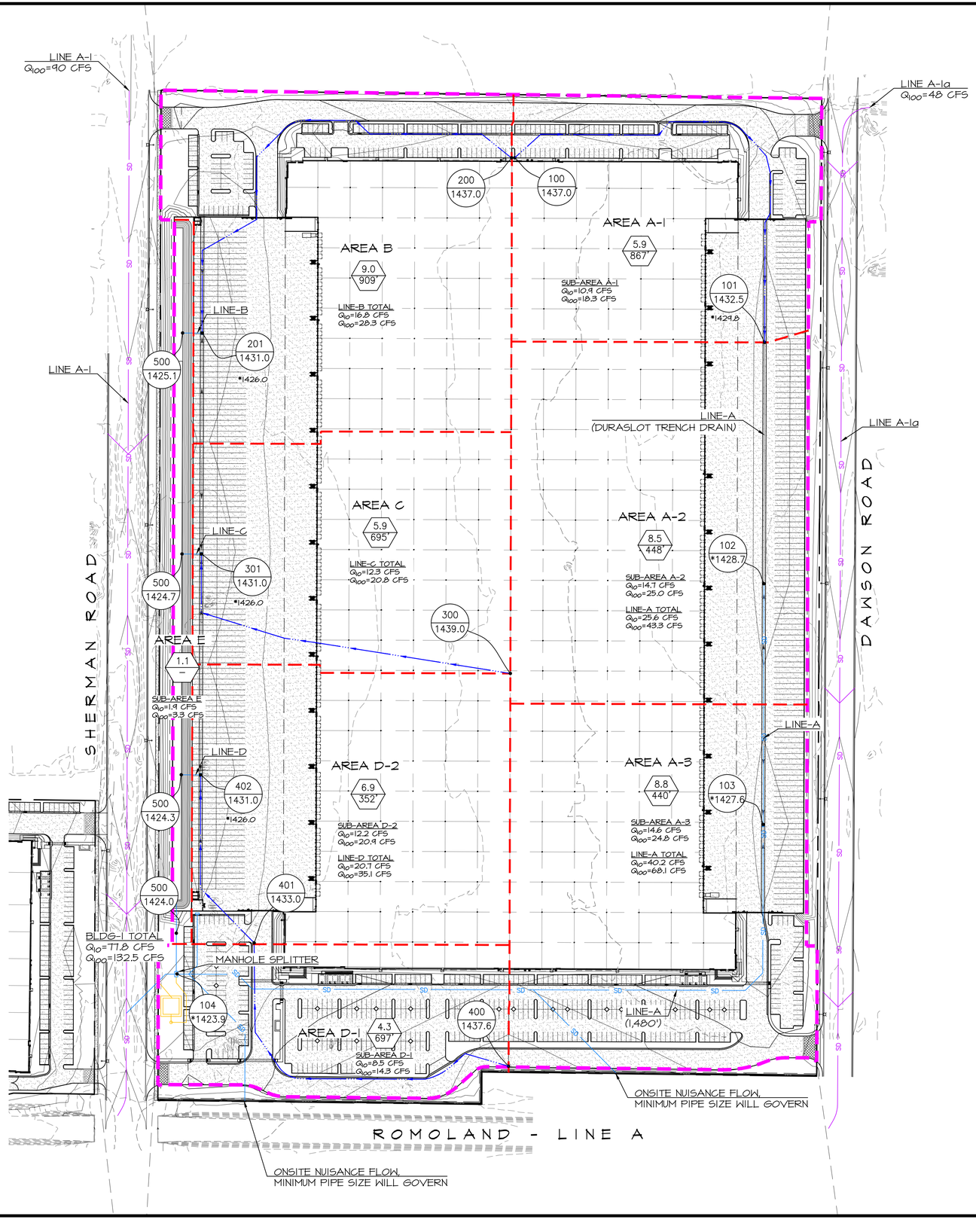


16+40	1.0978	0.05	Q	|	|	|	V |
16+45	1.0982	0.05	Q	|	|	|	V |
16+50	1.0985	0.05	Q	|	|	|	V |
16+55	1.0989	0.05	Q	|	|	|	V |
17+ 0	1.0992	0.05	Q	|	|	|	V |
17+ 5	1.0996	0.06	Q	|	|	|	V|
17+10	1.1001	0.07	Q	|	|	|	V|
17+15	1.1007	0.08	Q	|	|	|	V|
17+20	1.1012	0.08	Q	|	|	|	V|
17+25	1.1018	0.08	Q	|	|	|	V|
17+30	1.1024	0.08	Q	|	|	|	V|
17+35	1.1029	0.08	Q	|	|	|	V|
17+40	1.1035	0.08	Q	|	|	|	V|
17+45	1.1041	0.08	Q	|	|	|	V|
17+50	1.1046	0.08	Q	|	|	|	V|
17+55	1.1051	0.07	Q	|	|	|	V|
18+ 0	1.1055	0.07	Q	|	|	|	V|
18+ 5	1.1060	0.07	Q	|	|	|	V|
18+10	1.1065	0.07	Q	|	|	|	V|
18+15	1.1069	0.07	Q	|	|	|	V|
18+20	1.1074	0.07	Q	|	|	|	V|
18+25	1.1078	0.07	Q	|	|	|	V|
18+30	1.1083	0.07	Q	|	|	|	V|
18+35	1.1087	0.06	Q	|	|	|	V|
18+40	1.1091	0.05	Q	|	|	|	V|
18+45	1.1094	0.05	Q	|	|	|	V|
18+50	1.1097	0.05	Q	|	|	|	V|
18+55	1.1100	0.04	Q	|	|	|	V|
19+ 0	1.1102	0.03	Q	|	|	|	V|
19+ 5	1.1105	0.04	Q	|	|	|	V|
19+10	1.1108	0.05	Q	|	|	|	V|
19+15	1.1111	0.05	Q	|	|	|	V|
19+20	1.1115	0.05	Q	|	|	|	V|
19+25	1.1119	0.06	Q	|	|	|	V|
19+30	1.1124	0.06	Q	|	|	|	V|
19+35	1.1128	0.06	Q	|	|	|	V|
19+40	1.1131	0.05	Q	|	|	|	V|
19+45	1.1135	0.05	Q	|	|	|	V|
19+50	1.1138	0.05	Q	|	|	|	V|
19+55	1.1141	0.04	Q	|	|	|	V|
20+ 0	1.1143	0.03	Q	|	|	|	V|
20+ 5	1.1146	0.04	Q	|	|	|	V|
20+10	1.1149	0.05	Q	|	|	|	V|
20+15	1.1152	0.05	Q	|	|	|	V|
20+20	1.1155	0.05	Q	|	|	|	V|
20+25	1.1159	0.05	Q	|	|	|	V|
20+30	1.1162	0.05	Q	|	|	|	V|
20+35	1.1166	0.05	Q	|	|	|	V|
20+40	1.1169	0.05	Q	|	|	|	V|
20+45	1.1172	0.05	Q	|	|	|	V|
20+50	1.1176	0.04	Q	|	|	|	V|
20+55	1.1178	0.04	Q	|	|	|	V|
21+ 0	1.1180	0.03	Q	|	|	|	V|
21+ 5	1.1183	0.04	Q	|	|	|	V|
21+10	1.1186	0.05	Q	|	|	|	V|
21+15	1.1190	0.05	Q	|	|	|	V|

```
  21+20       1.1193      0.04  Q          |          |          |         V|
  21+25       1.1195      0.04  Q          |          |          |         V|
  21+30       1.1197      0.03  Q          |          |          |         V|
  21+35       1.1200      0.04  Q          |          |          |         V|
  21+40       1.1203      0.05  Q          |          |          |         V|
  21+45       1.1207      0.05  Q          |          |          |         V|
  21+50       1.1210      0.04  Q          |          |          |         V|
  21+55       1.1212      0.04  Q          |          |          |         V|
  22+ 0       1.1214      0.03  Q          |          |          |         V|
  22+ 5       1.1217      0.04  Q          |          |          |         V|
  22+10       1.1220      0.05  Q          |          |          |         V|
  22+15       1.1224      0.05  Q          |          |          |         V|
  22+20       1.1227      0.04  Q          |          |          |         V|
  22+25       1.1229      0.04  Q          |          |          |         V|
  22+30       1.1231      0.03  Q          |          |          |         V|
  22+35       1.1234      0.03  Q          |          |          |         V|
  22+40       1.1236      0.03  Q          |          |          |         V|
  22+45       1.1238      0.03  Q          |          |          |         V|
  22+50       1.1241      0.03  Q          |          |          |         V|
  22+55       1.1243      0.03  Q          |          |          |         V|
  23+ 0       1.1245      0.03  Q          |          |          |         V|
  23+ 5       1.1247      0.03  Q          |          |          |         V|
  23+10       1.1250      0.03  Q          |          |          |         V|
  23+15       1.1252      0.03  Q          |          |          |         V|
  23+20       1.1254      0.03  Q          |          |          |         V|
  23+25       1.1256      0.03  Q          |          |          |         V|
  23+30       1.1259      0.03  Q          |          |          |         V|
  23+35       1.1261      0.03  Q          |          |          |         V|
  23+40       1.1263      0.03  Q          |          |          |         V|
  23+45       1.1266      0.03  Q          |          |          |         V|
  23+50       1.1268      0.03  Q          |          |          |         V|
  23+55       1.1270      0.03  Q          |          |          |         V|
  24+ 0       1.1272      0.03  Q          |          |          |         V|
  24+ 5       1.1274      0.02  Q          |          |          |         V|
  24+10       1.1275      0.01  Q          |          |          |         V|
  24+15       1.1275      0.00  Q          |          |          |         V|
  24+20       1.1275      0.00  Q          |          |          |         V|
  24+25       1.1275      0.00  Q          |          |          |         V|
  24+30       1.1275      0.00  Q          |          |          |          V
-------------------------------------------------------------------------
```

HYDROLOGY MAPS

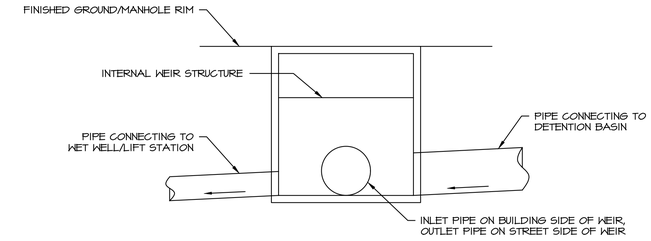


LEGEND

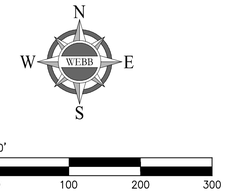
- DRAINAGE MANAGEMENT BOUNDARY
- SUB-AREA BOUNDARY
- FLOW DIRECTION
- 101 / 14xx — NODE DESIGNATION, NODE ELEVATION
- *14XX — *INVERT ELEVATION
- 5.0 / 1000' — WATERSHED AREA (ACRES), LONGEST WATER PATH (FT)

NOTES:

1. OFFSITE STORM DRAIN FLOWS ARE FROM ROMOLAND/LINE-A MDP.
2. LINE A-1a IS PROPOSED TO GO DOWN DAWSON BECAUSE OF ONSITE PIPE COVER LIMITATIONS



SPLITTER MANHOLE TYPICAL SECTION
N.T.S.



PRELIMINARY

CITY OF MENIFEE

RATIONAL METHOD DEVELOPED CONDITION MENIFEE COMMERCE CENTER BUILDING 1

SCALE: 1"=100'	ALBERT A. WEBB ASSOCIATES	W.O. 21-0026
DATE: AUG 2021	ENGINEERING CONSULTANTS 3788 McCRAY STREET RIVERSIDE, CA. 92506 PH. (951) 686-1070 FAX (951) 788-1256	SHEET 1
DESIGNED:		OF 2 SHEETS
CHECKED:		DWG. NO.
PLN CK REF:		
F.B.		

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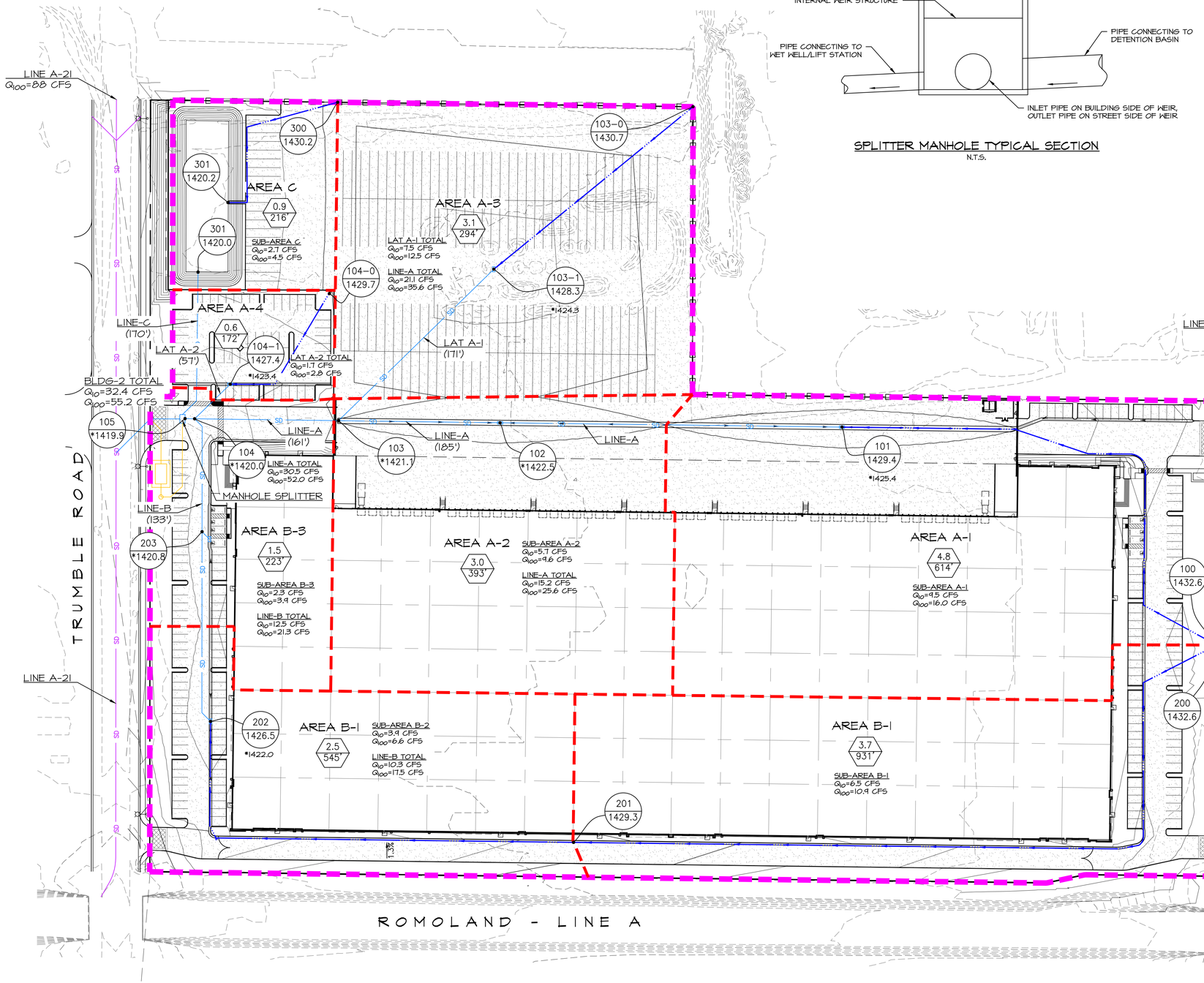

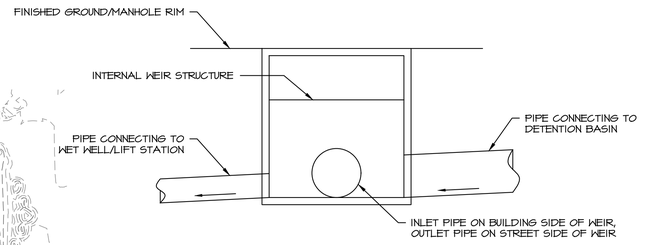

SPLITTER MANHOLE TYPICAL SECTION
N.T.S.

LEGEND

- DRAINAGE MANAGEMENT BOUNDARY
- SUB-AREA BOUNDARY
- FLOW DIRECTION
- 101 / 14xx — NODE DESIGNATION, NODE ELEVATION
- *14XX — *INVERT ELEVATION
- 5.0 / 1000' — WATERSHED AREA (ACRES), LONGEST WATER PATH (FT)

NOTES:

1. OFFSITE STORM DRAIN FLOWS ARE FROM ROMOLAND/LINE-A MDP.

N
W WEBB E
S

1" = 60'

60 0 60 120 180

PRELIMINARY

CITY OF MENIFEE

RATIONAL METHOD DEVELOPED CONDITION MENIFEE COMMERCE CENTER BUILDING 2

SCALE: 1"=60'	ALBERT A. WEBB ASSOCIATES — ENGINEERING CONSULTANTS, 3788 McCRAY STREET, RIVERSIDE CA. 92506, PH. (951) 686-1070, FAX (951) 788-1256	W.O. 21-0026
DATE: AUG 2021		SHEET 2
DESIGNED:		OF 2 SHEETS
CHECKED:		
PLN CK REF:		DWG. NO.
F.B.		

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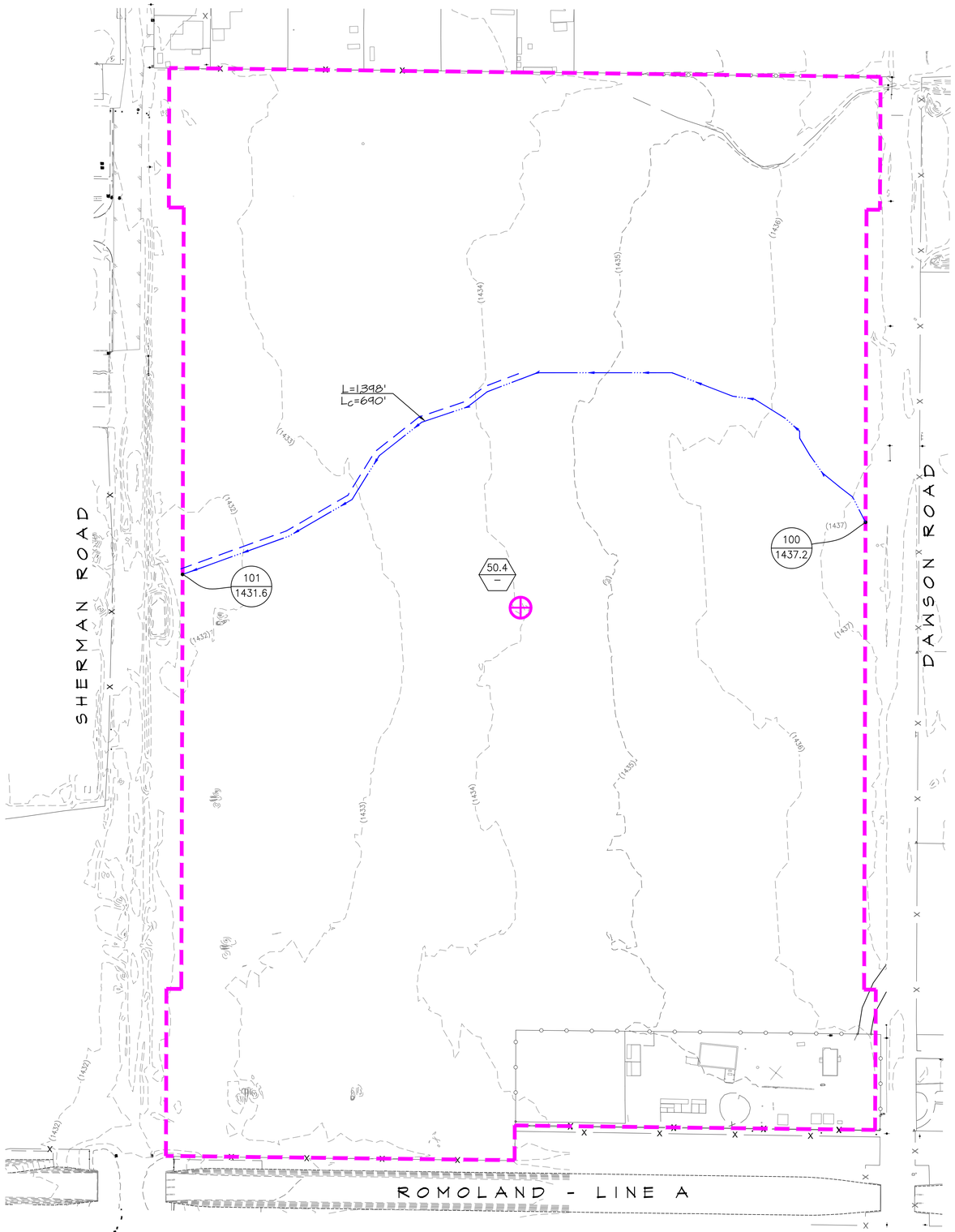

LEGEND

- DRAINAGE MANAGEMENT BOUNDARY
- FLOW DIRECTION
- L=14XX' / L_C=1000' — LONGEST FLOW PATH CENTROIDAL LENGTH
- 101 / 14xx — NODE DESIGNATION NODE ELEVATION
- 5.0 / – — WATERSHED AREA (ACRES)
- CENTROID

N W E S

1" = 100'

100 0 100 200 300

PRELIMINARY

CITY OF MENIFEE

UNIT HYDROGRAPH EXISTING CONDITION MENIFEE COMMERCE CENTER BUILDING 1

SCALE: 1"=100'	ALBERT A. WEBB ASSOCIATES	W.O. 21-0026
DATE: MAY 2021	ENGINEERING CONSULTANTS 3788 McCRAY STREET RIVERSIDE CA. 92506 PH. (951) 686-1070 FAX (951) 788-1256	SHEET 1
DESIGNED:		OF 4 SHEETS
CHECKED:		
PLN CK REF:		DWG. NO.
F.B.		

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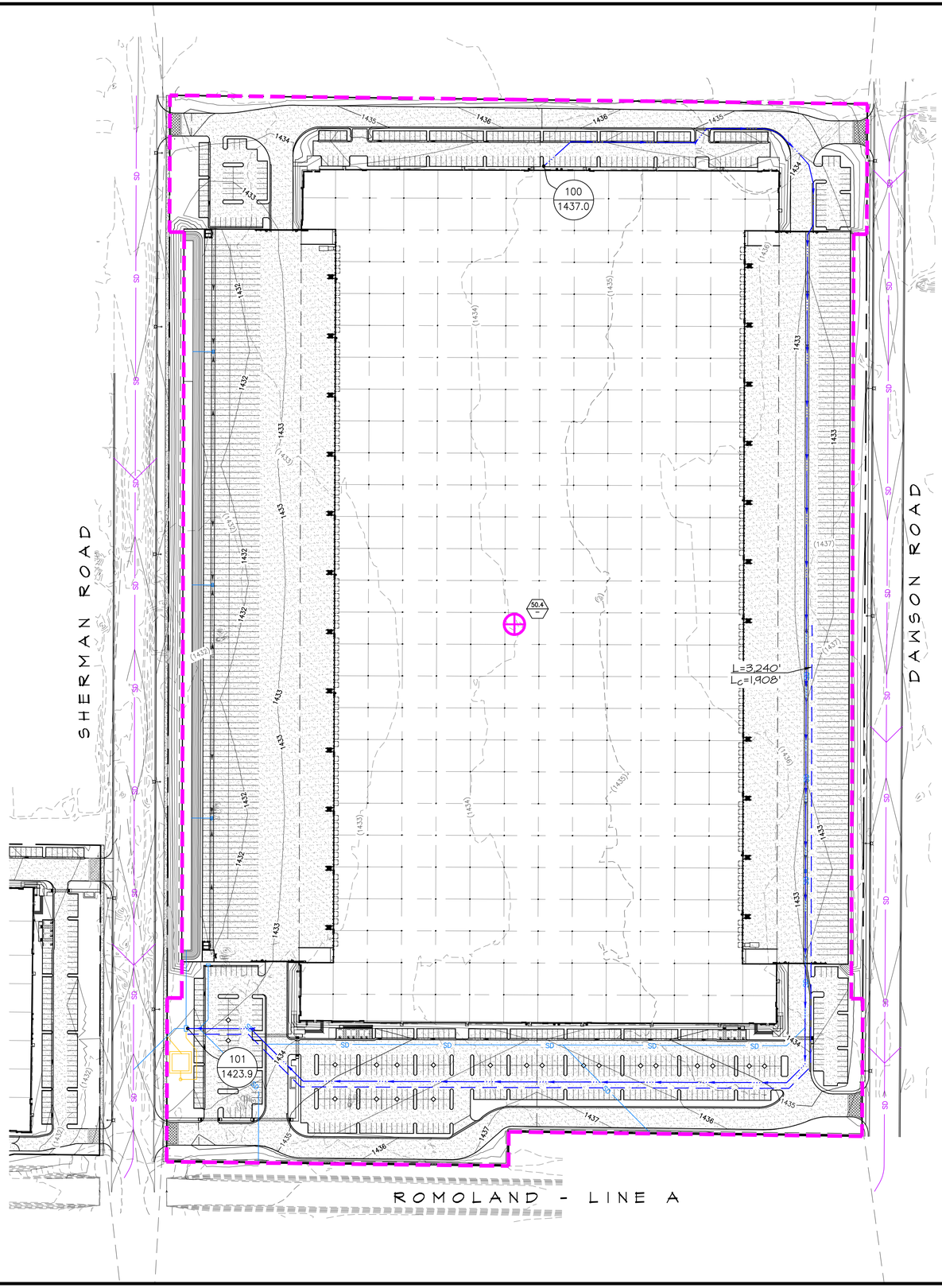

LEGEND

- DRAINAGE MANAGEMENT BOUNDARY
- FLOW DIRECTION
- L=14XX' / Lc=1000' — LONGEST FLOW PATH / CENTROIDAL LENGTH
- 101 / 14xx — NODE DESIGNATION / NODE ELEVATION
- 5.0 — WATERSHED AREA (ACRES)
- CENTROID

N W E S

1" = 100'

100 0 100 200 300

PRELIMINARY

CITY OF MENIFEE

UNIT HYDROGRAPH
DEVELOPED CONDITION
MENIFEE COMMERCE CENTER
BUILDING 1

SCALE: 1"=100'	ALBERT A. WEBB ASSOCIATES	W.O. 21-0026
DATE: MAY 2021	ENGINEERING CONSULTANTS 3788 McCRAY STREET RIVERSIDE, CA. 92506 PH. (951) 686-1070 FAX (951) 788-1256	SHEET 2 OF 4 SHEETS
DESIGNED:		
CHECKED:		
PLN CK REF:		DWG. NO.
F.B.		

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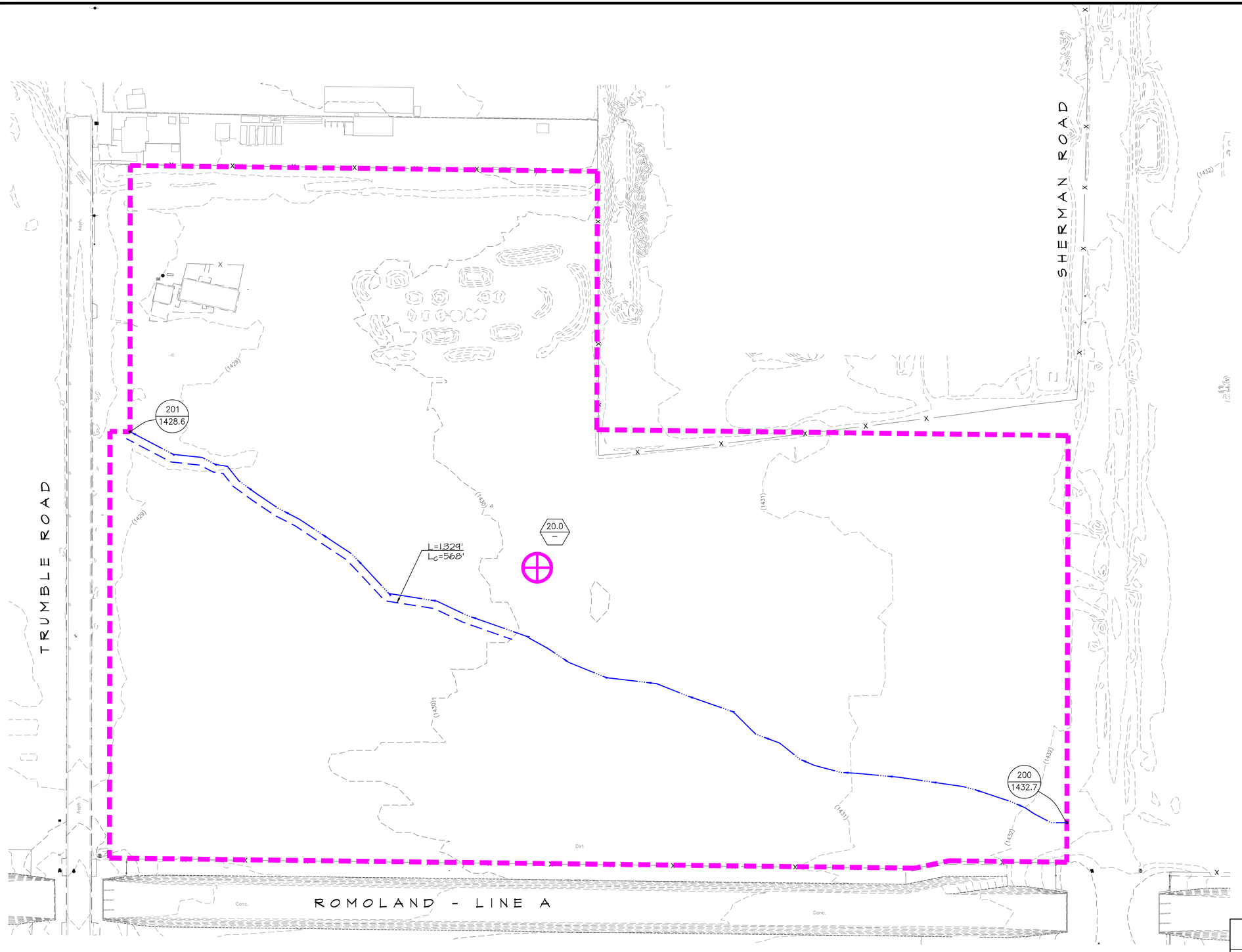

LEGEND

- DRAINAGE MANAGEMENT BOUNDARY
- FLOW DIRECTION
- L=14XX' / Lc=1000' — LONGEST FLOW PATH CENTROIDAL LENGTH
- 101 / 14xx — NODE DESIGNATION / NODE ELEVATION
- 5.0 — WATERSHED AREA (ACRES)
- CENTROID

N W E S

1" = 60'

60 0 60 120 180

PRELIMINARY

CITY OF MENIFEE

UNIT HYDROGRAPH EXISTING CONDITION MENIFEE COMMERCE CENTER BUILDING 2

SCALE: 1"=60'	ALBERT A. WEBB ASSOCIATES — ENGINEERING CONSULTANTS, 3788 McCRAY STREET, RIVERSIDE CA. 92506, PH. (951) 686-1070, FAX (951) 788-1256	W.O. 21-0026
DATE: MAY 2021		SHEET 3
DESIGNED:		OF 4 SHEETS
CHECKED:		
PLN CK REF:		DWG. NO.
F.B.		

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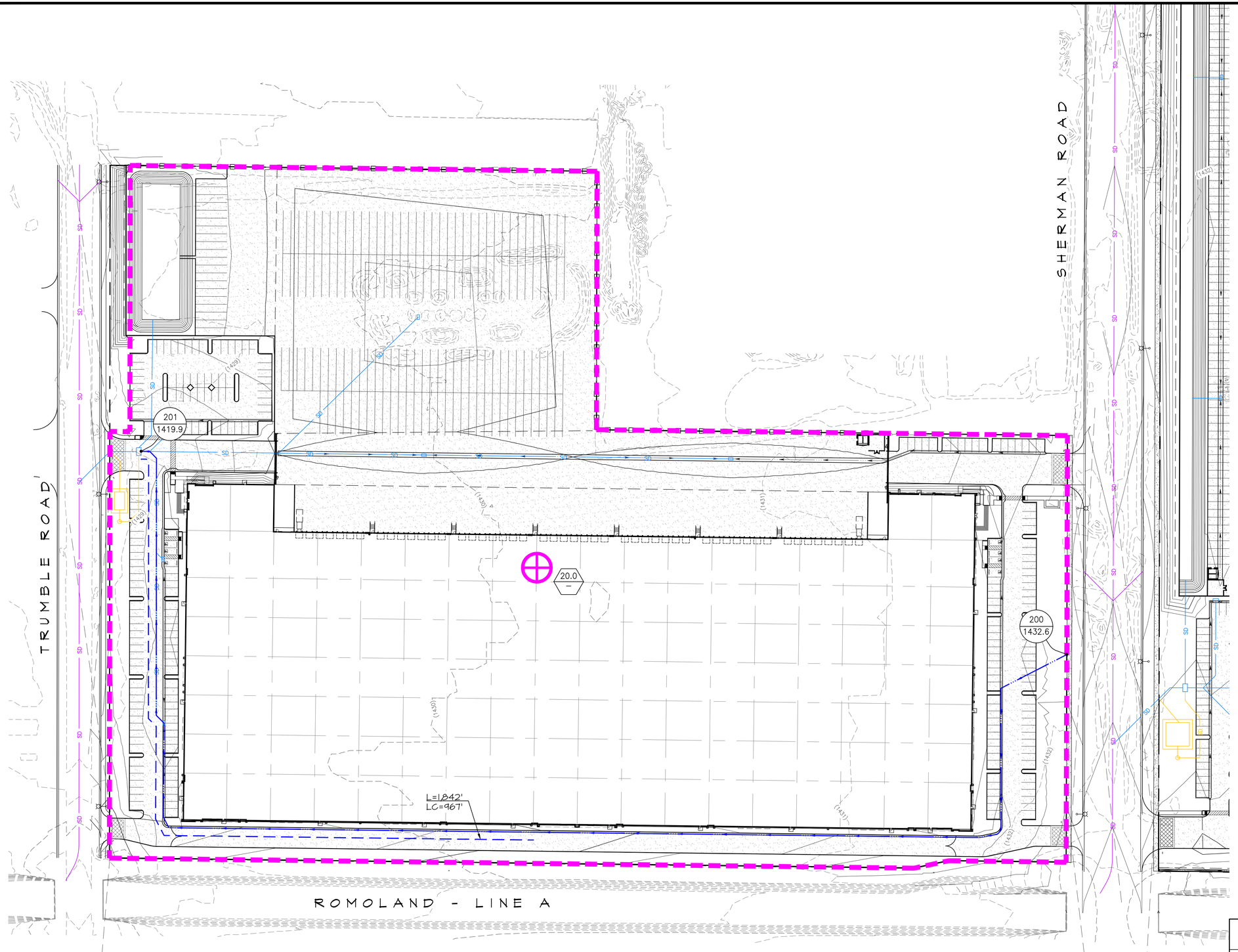

LEGEND

- DRAINAGE MANAGEMENT BOUNDARY
- FLOW DIRECTION
- L=14XX' / L_C=1000' — LONGEST FLOW PATH CENTROIDAL LENGTH
- 101 / 14xx — NODE DESIGNATION / NODE ELEVATION
- 5.0 / — — WATERSHED AREA (ACRES)
- CENTROID

N W E S

1" = 60'

60 0 60 120 180

PRELIMINARY

CITY OF MENIFEE

UNIT HYDROGRAPH
DEVELOPED CONDITION
MENIFEE COMMERCE CENTER
BUILDING 2

SCALE: 1"=60'	ALBERT A. WEBB ASSOCIATES	W.O. 21-0026
DATE: MAY 2021	ENGINEERING CONSULTANTS 3788 McCRAY STREET RIVERSIDE CA. 92506 PH. (951) 686-1070 FAX (951) 788-1256	SHEET 4 OF 4 SHEETS
DESIGNED:		
CHECKED:		DWG. NO.
PLN CK REF:		
F.B.		

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APPENDIX B – HYDRAULICS

SPLITTER MANHOLE WEIRS

Basin 1
Weir Calculation

ALBERT A WEBB ASSOCIATES
ENGINEERING CONSULTANTS

Designer:	TSW
Date:	8/4/2021
Project:	Menifee Commerce Center
	Building-1

Weir Crest Invert=	1431.0	
Q_{100} =	132.0	ft^3/sec
Coeifficent=	3.0	
h=	2.0	ft

$$Spillway\ Length = \frac{Q_{peak-100Y}\ (ft^3/sec)}{Coefficient(unitless) \times (Head^{1.5})\ (ft)}$$

Length of Spillway=	16.0	ft
Proposed Weir Length=	16.0	ft

The spillway length will be within the flow splitter manhole. The weir crest

Basin 2
Weir Calculation

ALBERT A WEBB ASSOCIATES
ENGINEERING CONSULTANTS

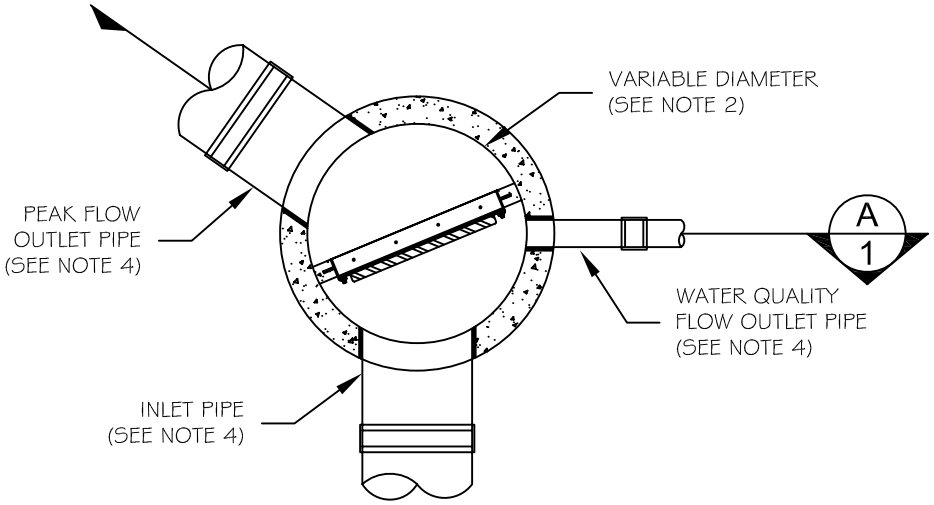
Designer:	TSW
Date:	8/4/2021
Project:	Menifee Commerce Center
	Building-2

Weir Crest Invert=	1427.0
Q_{100} =	55.2 ft^3/sec
Coeifficent=	3.0
h=	1.1 ft

$$Spillway\ Length = \frac{Q_{peak-100Y}\ (ft^3/sec)}{Coefficient(unitless) \times (Head^{1.5})\ (ft)}$$

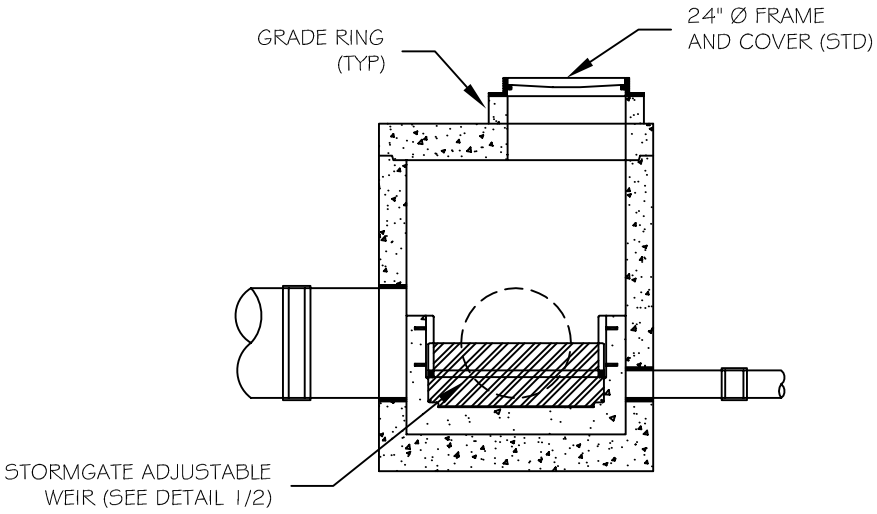
Length of Spillway=	16.0 ft
Proposed Weir Length=	16.0 ft

The spillway length will be within the flow splitter manhole. The weir crest



STORMGATE MANHOLE - PLAN VIEW 1/1

TYPICAL SECTION FOR REFERENCE ONLY: SIZE AND ARRANGEMENT WILL VARY PER FINAL CONSTRUCTION DRAWINGS



STORMGATE MANHOLE - SECTION VIEW A/1

CONTECH® STORMWATER SOLUTIONS™
contechstormwater.com

STORMGATE MANHOLE HIGH FLOW BYPASS PLAN AND SECTION VIEWS STANDARD DETAIL

DRAWING 1

DATE: 04/04/06	SCALE: NONE	FILE NAME: SG-MH-DTL	DRAWN: MJW	CHECKED: ARG

OFFSITE STORM DRAINS

Hydraulic Analysis Report

Project Data

Project Title:

Designer:

Project Date: Friday, April 23, 2021

Project Units: U.S. Customary Units

Notes:

Channel Analysis: A-21 US

Notes:

Input Parameters

Channel Type: Rectangular

Channel Width: 8.0000 ft

Longitudinal Slope: 0.0010 ft/ft

Manning's n: 0.0150

Flow: 88.0000 cfs

Result Parameters

Depth: 2.5954 ft

Area of Flow: 20.7630 ft^2

Wetted Perimeter: 13.1908 ft

Hydraulic Radius: 1.5741 ft

Average Velocity: 4.2383 ft/s

Top Width: 8.0000 ft

Froude Number: 0.4636

Critical Depth: 1.5547 ft

Critical Velocity: 7.0754 ft/s

Critical Slope: 0.0044 ft/ft

Critical Top Width: 8.00 ft

Calculated Max Shear Stress: 0.1620 lb/ft^2

Calculated Avg Shear Stress: 0.0982 lb/ft^2

Channel Analysis: A-21 DS

Notes:

Input Parameters

Channel Type: Rectangular

Channel Width: 9.0000 ft

Longitudinal Slope: 0.0010 ft/ft

Manning's n: 0.0150

Flow: 145.0000 cfs

Result Parameters

Depth: 3.3346 ft

Area of Flow: 30.0117 ft^2

Wetted Perimeter: 15.6693 ft

Hydraulic Radius: 1.9153 ft

Average Velocity: 4.8315 ft/s

Top Width: 9.0000 ft

Froude Number: 0.4663

Critical Depth: 2.0051 ft

Critical Velocity: 8.0351 ft/s

Critical Slope: 0.0043 ft/ft

Critical Top Width: 9.00 ft

Calculated Max Shear Stress: 0.2081 lb/ft^2

Calculated Avg Shear Stress: 0.1195 lb/ft^2

Channel Analysis: A-1 US

Notes:

Input Parameters

Channel Type: Rectangular

Channel Width: 7.0000 ft

Longitudinal Slope: 0.0015 ft/ft

Manning's n: 0.0150

Flow: 90.0000 cfs

Result Parameters

Depth: 2.5758 ft

Area of Flow: 18.0308 ft^2

Wetted Perimeter: 12.1517 ft

Hydraulic Radius: 1.4838 ft

Average Velocity: 4.9915 ft/s

Top Width: 7.0000 ft

Froude Number: 0.5481

Critical Depth: 1.7251 ft

Critical Velocity: 7.4530 ft/s

Critical Slope: 0.0047 ft/ft

Critical Top Width: 7.00 ft

Calculated Max Shear Stress: 0.2411 lb/ft^2

Calculated Avg Shear Stress: 0.1389 lb/ft^2

Channel Analysis: A-1 DS

Notes:

Input Parameters

Channel Type: Rectangular

Channel Width: 9.0000 ft

Longitudinal Slope: 0.0015 ft/ft

Manning's n: 0.0150

Flow: 216.0000 cfs

Result Parameters

Depth: 3.8469 ft

Area of Flow: 34.6217 ft^2

Wetted Perimeter: 16.6937 ft

Hydraulic Radius: 2.0739 ft

Average Velocity: 6.2389 ft/s

Top Width: 9.0000 ft

Froude Number: 0.5606

Critical Depth: 2.6153 ft

Critical Velocity: 9.1768 ft/s

Critical Slope: 0.0044 ft/ft

Critical Top Width: 9.00 ft

Calculated Max Shear Stress: 0.3601 lb/ft^2

Calculated Avg Shear Stress: 0.1941 lb/ft^2

Channel Analysis: A-1a US

Notes:

Input Parameters

Channel Type: Rectangular

Channel Width: 4.5000 ft

Longitudinal Slope: 0.0015 ft/ft

Manning's n: 0.0150

Flow: 48.0000 cfs

Result Parameters

Depth: 2.4876 ft

Area of Flow: 11.1943 ft^2

Wetted Perimeter: 9.4752 ft

Hydraulic Radius: 1.1814 ft

Average Velocity: 4.2879 ft/s

Top Width: 4.5000 ft

Froude Number: 0.4791

Critical Depth: 1.5231 ft

Critical Velocity: 7.0032 ft/s

Critical Slope: 0.0057 ft/ft

Critical Top Width: 4.50 ft

Calculated Max Shear Stress: 0.2328 lb/ft^2

Calculated Avg Shear Stress: 0.1106 lb/ft^2

STAGE-STORAGE/OUTFLOW TABLES

ALBERT A. WEBB ASSOCIATES

Basin Stage-Storage-Outflow Table
21-0026 - Core5 Menifee Commerce Center
Building 1 Basin

			Pumped Flowate	2-Year 24 Hour Orifice		100-year Basin Outlet	
Bottom Elevation:	1424			EX. Q2-YR, 24-HR	5.1	Peak Q-100-YR	132.5
Bottom Length:	1300	FT		Opening (IN)	4	Length (FT)	6
Bottom Width:	16	FT		Opening (FT)	0.333	C	3
Bottom Slope:	0.1	%	Pump Q (cfs)	AREA (SF)	0.087		
Side Slope:	2	:1	2.5	# of Orifices	4		
				Total Area (SF)	0.349		
				G (FT/s^2)	32.2		
				Cd	0.66		
				Invert H (FT)	1429.9	Weir Crest	1431

#	Elevation (FT)	Depth (FT)	Storage (AC-FT)	Q (CFS)	h (FT)	Q* (CFS)	h (FT)	Q** (CFS)	Qtotal (CFS)
1.00	1,424.00	0.00	0.000	0.000	0.000	0.000	0.00	0.000	0.000
2.00	1,424.10	0.10	0.001	2.500	0.000	0.000	0.00	0.000	2.500
3.00	1,424.50	0.50	0.046	2.500	0.000	0.000	0.00	0.000	2.500
4.00	1,425.00	1.00	0.190	2.500	0.000	0.000	0.00	0.000	2.500
5.00	1,426.00	2.00	0.690	2.500	0.000	0.000	0.00	0.000	2.500
6.00	1,427.00	3.00	1.268	2.500	0.000	0.000	0.00	0.000	2.500
7.00	1,428.00	4.00	1.911	2.500	0.000	0.000	0.00	0.000	2.500
8.00	1,429.00	5.00	2.620	2.500	0.000	0.000	0.00	0.000	2.500
9.00	1,430.00	6.00	3.396	2.500	0.000	0.000	0.00	0.000	2.500
10.00	1,430.50	6.50	3.809	2.500	0.433	1.217	0.00	0.000	3.717
11.00	1,431.10	7.10	4.327	2.500	1.033	1.879	0.10	0.569	4.949
12.00	1,431.50	7.50	4.686	2.500	1.433	2.213	0.50	6.364	11.077
13.00	1,432.00	8.00	5.149	2.500	1.933	2.571	1.00	18.000	23.071

*Q determined using orifice equation, Q=CA(2gh)^0.5

**Q determined using weir equation, Q=CL(h)^3/2

ALBERT A. WEBB ASSOCIATES

Basin Stage-Storage-Outflow Table
21-0026 - Core5 Menifee Commerce Center
Building 2 Basin

			Pumped Flowate	2-Year 24 Hour Orifice		100-year Basin Outlet	
Bottom Elevation:	1420			EX. Q2-YR, 24-HR	2.1	Peak Q-100-YR	57.1
Bottom Length:	300	FT		Opening (IN)	6	Length (FT)	6
Bottom Width:	28	FT		Opening (FT)	0.500	C	3
Bottom Slope:	0.1	%	Pump Q (cfs)	AREA (SF)	0.196		
Side Slope:	2	:1	1	# of Orifices	2		
				Total Area (SF)	0.393		
				G (FT/s^2)	32.2		
				Cd	0.66		
				Invert H (FT)	1426.5	Weir Crest	1427

#	Elevation (FT)	Depth (FT)	Storage (AC-FT)	Q (CFS)	h (FT)	Q* (CFS)	h (FT)	Q** (CFS)	Qtotal (CFS)
1.00	1,420.00	0.00	0.000	0.000	0.000	0.000	0.00	0.000	0.000
2.00	1,420.10	0.10	0.004	1.000	0.000	0.000	0.00	0.000	1.000
3.00	1,420.50	0.50	0.079	1.000	0.000	0.000	0.00	0.000	1.000
4.00	1,421.00	1.00	0.182	1.000	0.000	0.000	0.00	0.000	1.000
5.00	1,422.00	2.00	0.406	1.000	0.000	0.000	0.00	0.000	1.000
6.00	1,423.00	3.00	0.651	1.000	0.000	0.000	0.00	0.000	1.000
7.00	1,424.00	4.00	0.918	1.000	0.000	0.000	0.00	0.000	1.000
8.00	1,425.00	5.00	1.208	1.000	0.000	0.000	0.00	0.000	1.000
9.00	1,426.00	6.00	1.522	1.000	0.000	0.000	0.00	0.000	1.000
10.00	1,426.50	6.50	1.688	1.000	0.000	0.000	0.00	0.000	1.000
11.00	1,427.10	7.10	1.896	1.000	0.350	1.230	0.10	0.569	2.800
12.00	1,427.50	7.50	2.039	1.000	0.750	1.801	0.50	6.364	9.165
13.00	1,428.00	8.00	2.223	1.000	1.250	2.325	1.00	18.000	21.325

*Q determined using orifice equation, Q=CA(2gh)^0.5

**Q determined using weir equation, Q=CL(h)^3/2

BASIN ROUTING
2-YEAR, 24-HOUR STORM EVENTS

FLOOD HYDROGRAPH ROUTING PROGRAM

Study date: 08/05/21

21-0026 - MENIFEE COMMERCE CENTER
BASIN ROUTING CALCULATIONS
2-YEAR, 24-HOUR STORM EVENT: BUILDING 1
FN: ROUTE242.OUT TSW

Program License Serial Number 4010

********** HYDROGRAPH INFORMATION **********

From study/file name: ONSITEPROP242.rte

**********HYDROGRAPH DATA**********

Number of intervals = 298
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 11.152 (CFS)
Total volume = 6.854 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

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Process from Point/Station 1.000 to Point/Station 2.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 298
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)

0.000	0.000	0.000	0.000	0.000
0.100	0.001	2.500	-0.008	0.010
0.500	0.046	2.500	0.037	0.055
1.000	0.190	2.500	0.181	0.199
2.000	0.690	2.500	0.681	0.699
3.000	1.268	2.500	1.259	1.277
4.000	1.911	2.500	1.902	1.920
5.000	2.620	2.500	2.611	2.629
6.000	3.396	2.500	3.387	3.405
6.500	3.809	3.717	3.796	3.822
7.100	4.327	4.949	4.310	4.344
7.500	4.686	11.077	4.648	4.724
8.000	5.149	23.071	5.070	5.228

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0 2.8 5.58 8.36 11.15	Depth (Ft.)
0.083	0.08	0.07	0.000	O | | | |	0.00
0.167	0.35	0.33	0.000	OI | | | |	0.01
0.250	0.50	0.50	0.000	|O | | | |	0.02
0.333	0.60	0.58	0.000	|O | | | |	0.02
0.417	0.77	0.76	0.000	| O | | | |	0.03
0.500	0.86	0.86	0.000	| O | | | |	0.03
0.583	0.91	0.91	0.000	| O | | | |	0.04
0.667	0.94	0.94	0.000	| O | | | |	0.04
0.750	0.96	0.96	0.000	| O | | | |	0.04
0.833	1.01	1.01	0.000	| O | | | |	0.04
0.917	1.16	1.15	0.000	| O | | | |	0.05
1.000	1.24	1.24	0.000	| O | | | |	0.05
1.083	1.23	1.23	0.000	| O | | | |	0.05
1.167	1.11	1.13	0.000	| O | | | |	0.05
1.250	1.05	1.05	0.000	| O | | | |	0.04
1.333	1.03	1.04	0.000	| O | | | |	0.04
1.417	1.02	1.02	0.000	| O | | | |	0.04
1.500	1.01	1.02	0.000	| O | | | |	0.04
1.583	1.01	1.01	0.000	| O | | | |	0.04
1.667	1.01	1.01	0.000	| O | | | |	0.04
1.750	1.00	1.00	0.000	| O | | | |	0.04
1.833	1.04	1.03	0.000	| O | | | |	0.04
1.917	1.17	1.16	0.000	| O | | | |	0.05
2.000	1.24	1.25	0.000	| O | | | |	0.05
2.083	1.27	1.27	0.001	| O | | | |	0.05
2.167	1.29	1.29	0.001	| O | | | |	0.05
2.250	1.30	1.30	0.001	| O | | | |	0.05
2.333	1.31	1.31	0.001	| O | | | |	0.05
2.417	1.32	1.31	0.001	| O | | | |	0.05
2.500	1.32	1.32	0.001	| O | | | |	0.05
2.583	1.36	1.36	0.001	| O | | | |	0.05
2.667	1.50	1.49	0.001	| O | | | |	0.06
2.750	1.58	1.58	0.001	| O | | | |	0.06
2.833	1.61	1.60	0.001	| O | | | |	0.06
2.917	1.62	1.62	0.001	| O | | | |	0.06

3.000	1.63	1.63	0.001	O				0.07
3.083	1.64	1.64	0.001	O				0.07
3.167	1.65	1.65	0.001	O				0.07
3.250	1.65	1.65	0.001	O				0.07
3.333	1.66	1.65	0.001	O				0.07
3.417	1.66	1.66	0.001	O				0.07
3.500	1.66	1.66	0.001	O				0.07
3.583	1.66	1.66	0.001	O				0.07
3.667	1.66	1.66	0.001	O				0.07
3.750	1.66	1.66	0.001	O				0.07
3.833	1.70	1.69	0.001	O				0.07
3.917	1.84	1.82	0.001	O				0.07
4.000	1.91	1.91	0.001	O				0.08
4.083	1.94	1.93	0.001	O				0.08
4.167	1.95	1.96	0.001	O				0.08
4.250	1.97	1.96	0.001	O				0.08
4.333	2.01	2.01	0.001	O				0.08
4.417	2.16	2.14	0.001	O				0.09
4.500	2.23	2.24	0.001	O				0.09
4.583	2.27	2.26	0.001	O				0.09
4.667	2.29	2.29	0.001	O				0.09
4.750	2.30	2.30	0.001	O				0.09
4.833	2.34	2.34	0.001	O				0.09
4.917	2.49	2.48	0.001	O				0.10
5.000	2.57	2.50	0.001	O				0.10
5.083	2.52	2.50	0.002	O				0.10
5.167	2.26	2.45	0.001	IO				0.10
5.250	2.13	2.00	0.001	OI				0.08
5.333	2.12	2.23	0.001	O				0.09
5.417	2.23	2.13	0.001	O				0.09
5.500	2.28	2.35	0.001	O				0.09
5.583	2.34	2.27	0.001	O				0.09
5.667	2.48	2.50	0.001	O				0.10
5.750	2.56	2.50	0.001	O				0.10
5.833	2.59	2.50	0.002	O				0.11
5.917	2.61	2.50	0.002	O				0.11
6.000	2.62	2.50	0.003	O				0.12
6.083	2.67	2.50	0.004	O				0.13
6.167	2.82	2.50	0.006	OI				0.14
6.250	2.90	2.50	0.008	OI				0.17
6.333	2.93	2.50	0.011	OI				0.19
6.417	2.95	2.50	0.014	OI				0.22
6.500	2.96	2.50	0.017	OI				0.25
6.583	3.01	2.50	0.021	OI				0.28
6.667	3.15	2.50	0.025	O	I			0.31
6.750	3.23	2.50	0.029	O	I			0.35
6.833	3.26	2.50	0.035	O	I			0.40
6.917	3.28	2.50	0.040	O	I			0.45
7.000	3.29	2.50	0.045	O	I			0.49
7.083	3.30	2.50	0.051	O	I			0.52
7.167	3.31	2.50	0.056	O	I			0.54
7.250	3.31	2.50	0.062	O	I			0.56
7.333	3.35	2.50	0.068	O	I			0.58
7.417	3.49	2.50	0.074	O		I		0.60
7.500	3.57	2.50	0.081	O		I		0.62
7.583	3.63	2.50	0.089	O		I		0.65

7.667	3.79	2.50	0.097	O	I			0.68
7.750	3.87	2.50	0.106	O	I			0.71
7.833	3.95	2.50	0.116	O	I			0.74
7.917	4.11	2.50	0.127	O	I			0.78
8.000	4.20	2.50	0.138	O	I			0.82
8.083	4.32	2.50	0.150	O	I			0.86
8.167	4.62	2.50	0.164	O	I			0.91
8.250	4.78	2.50	0.179	O	I			0.96
8.333	4.85	2.50	0.195	O	I			1.01
8.417	4.89	2.50	0.211	O	I			1.04
8.500	4.92	2.50	0.228	O	I			1.08
8.583	4.98	2.50	0.244	O	I			1.11
8.667	5.13	2.50	0.262	O	I			1.14
8.750	5.21	2.50	0.280	O	I			1.18
8.833	5.29	2.50	0.299	O	I			1.22
8.917	5.45	2.50	0.319	O	I			1.26
9.000	5.53	2.50	0.340	O	I			1.30
9.083	5.65	2.50	0.361	O	I			1.34
9.167	5.95	2.50	0.384	O	I			1.39
9.250	6.11	2.50	0.408	O	I			1.44
9.333	6.21	2.50	0.433	O	I			1.49
9.417	6.40	2.50	0.459	O	I			1.54
9.500	6.50	2.50	0.487	O	I			1.59
9.583	6.58	2.50	0.514	O	I			1.65
9.667	6.75	2.50	0.543	O	I			1.71
9.750	6.85	2.50	0.573	O	I			1.77
9.833	6.93	2.50	0.603	O	I			1.83
9.917	7.10	2.50	0.634	O	I			1.89
10.000	7.19	2.50	0.666	O	I			1.95
10.083	6.96	2.50	0.698	O	I			2.01
10.167	6.01	2.50	0.725	O	I			2.06
10.250	5.52	2.50	0.748	O	I			2.10
10.333	5.33	2.50	0.768	O	I			2.13
10.417	5.21	2.50	0.787	O	I			2.17
10.500	5.14	2.50	0.805	O	I			2.20
10.583	5.28	2.50	0.824	O	I			2.23
10.667	5.93	2.50	0.845	O	I			2.27
10.750	6.27	2.50	0.870	O	I			2.31
10.833	6.39	2.50	0.896	O	I			2.36
10.917	6.46	2.50	0.923	O	I			2.40
11.000	6.51	2.50	0.951	O	I			2.45
11.083	6.51	2.50	0.978	O	I			2.50
11.167	6.41	2.50	1.006	O	I			2.55
11.250	6.35	2.50	1.032	O	I			2.59
11.333	6.34	2.50	1.059	O	I			2.64
11.417	6.34	2.50	1.085	O	I			2.68
11.500	6.33	2.50	1.112	O	I			2.73
11.583	6.24	2.50	1.138	O	I			2.77
11.667	5.96	2.50	1.163	O	I			2.82
11.750	5.81	2.50	1.186	O	I			2.86
11.833	5.79	2.50	1.209	O	I			2.90
11.917	5.89	2.50	1.232	O	I			2.94
12.000	5.94	2.50	1.255	O	I			2.98
12.083	6.22	2.50	1.280	O	I			3.02
12.167	7.19	2.50	1.309	O	I			3.06
12.250	7.71	2.50	1.343	O	I			3.12

12.333	7.95	2.50	1.380	| O|	|	I |	|	3.17
12.417	8.21	2.50	1.418	| O|	|	I|	|	3.23
12.500	8.37	2.50	1.458	| O|	|	I	|	3.30
12.583	8.53	2.50	1.499	| O|	|	I	|	3.36
12.667	8.87	2.50	1.542	| O|	|	|I	|	3.43
12.750	9.06	2.50	1.586	| O|	|	|I	|	3.49
12.833	9.18	2.50	1.632	| O|	|	| I	|	3.57
12.917	9.38	2.50	1.678	| O|	|	| I	|	3.64
13.000	9.48	2.50	1.726	| O|	|	| I	|	3.71
13.083	9.72	2.50	1.775	| O|	|	| I	|	3.79
13.167	10.45	2.50	1.827	| O|	|	| I	|	3.87
13.250	10.83	2.50	1.883	| O|	|	| I|		3.96
13.333	10.99	2.50	1.941	| O|	|	| I|		4.04
13.417	11.09	2.50	2.000	| O|	|	| I|		4.13
13.500	11.15	2.50	2.059	| O|	|	| I		4.21
13.583	10.77	2.50	2.118	| O|	|	| I |		4.29
13.667	9.28	2.50	2.170	| O|	|	| I	|	4.36
13.750	8.50	2.50	2.214	| O|	|	I	|	4.43
13.833	8.20	2.50	2.254	| O|	|	I|	|	4.48
13.917	8.02	2.50	2.292	| O|	|	I|	|	4.54
14.000	7.89	2.50	2.330	| O|	|	I |	|	4.59
14.083	7.96	2.50	2.367	| O|	|	I |	|	4.64
14.167	8.45	2.50	2.407	| O|	|	I	|	4.70
14.250	8.70	2.50	2.449	| O|	|	I	|	4.76
14.333	8.74	2.50	2.491	| O|	|	|I	|	4.82
14.417	8.64	2.50	2.534	| O|	|	I	|	4.88
14.500	8.61	2.50	2.576	| O|	|	I	|	4.94
14.583	8.61	2.50	2.618	| O|	|	I	|	5.00
14.667	8.62	2.50	2.660	| O|	|	I	|	5.05
14.750	8.62	2.50	2.703	| O|	|	I	|	5.11
14.833	8.59	2.50	2.745	| O|	|	I	|	5.16
14.917	8.46	2.50	2.786	| O|	|	I	|	5.21
15.000	8.38	2.50	2.827	| O|	|	I	|	5.27
15.083	8.31	2.50	2.867	| O|	|	I|	|	5.32
15.167	8.15	2.50	2.907	| O|	|	I|	|	5.37
15.250	8.07	2.50	2.945	| O|	|	I|	|	5.42
15.333	7.99	2.50	2.983	| O|	|	I |	|	5.47
15.417	7.83	2.50	3.021	| O|	|	I |	|	5.52
15.500	7.74	2.50	3.057	| O|	|	I |	|	5.56
15.583	7.55	2.50	3.092	| O|	|	I |	|	5.61
15.667	6.97	2.50	3.125	| O|	| I |	|	5.65
15.750	6.66	2.50	3.155	| O|	| I |	|	5.69
15.833	6.53	2.50	3.183	| O|	| I |	|	5.73
15.917	6.46	2.50	3.211	| O|	| I |	|	5.76
16.000	6.41	2.50	3.238	| O|	| I |	|	5.80
16.083	5.80	2.50	3.263	| O|	I |	|	5.83
16.167	3.69	2.50	3.278	| O| I	|	|	5.85
16.250	2.58	2.50	3.282	| O|	|	|	5.85
16.333	2.14	2.50	3.281	| IO|	|	|	5.85
16.417	1.86	2.50	3.278	| I O|	|	|	5.85
16.500	1.69	2.50	3.273	| I O|	|	|	5.84
16.583	1.53	2.50	3.267	| I O|	|	|	5.83
16.667	1.31	2.50	3.259	| I O|	|	|	5.82
16.750	1.17	2.50	3.251	| I O|	|	|	5.81
16.833	1.10	2.50	3.241	| I O|	|	|	5.80
16.917	1.03	2.50	3.231	| I O|	|	|	5.79

17.000	1.02	2.50	3.221	I O				5.77
17.083	1.09	2.50	3.211	I O				5.76
17.167	1.36	2.50	3.203	I O				5.75
17.250	1.50	2.50	3.195	I O				5.74
17.333	1.56	2.50	3.189	I O				5.73
17.417	1.59	2.50	3.182	I O				5.72
17.500	1.61	2.50	3.176	I O				5.72
17.583	1.63	2.50	3.170	I O				5.71
17.667	1.64	2.50	3.164	I O				5.70
17.750	1.65	2.50	3.158	I O				5.69
17.833	1.61	2.50	3.152	I O				5.69
17.917	1.48	2.50	3.145	I O				5.68
18.000	1.41	2.50	3.138	I O				5.67
18.083	1.38	2.50	3.131	I O				5.66
18.167	1.36	2.50	3.123	I O				5.65
18.250	1.35	2.50	3.115	I O				5.64
18.333	1.34	2.50	3.107	I O				5.63
18.417	1.34	2.50	3.099	I O				5.62
18.500	1.33	2.50	3.091	I O				5.61
18.583	1.29	2.50	3.083	I O				5.60
18.667	1.15	2.50	3.074	I O				5.58
18.750	1.08	2.50	3.064	I O				5.57
18.833	1.01	2.50	3.054	I O				5.56
18.917	0.85	2.50	3.044	I O				5.55
19.000	0.77	2.50	3.032	I O				5.53
19.083	0.77	2.50	3.020	I O				5.52
19.167	0.89	2.50	3.009	I O				5.50
19.250	0.94	2.50	2.998	I O				5.49
19.333	1.00	2.50	2.987	I O				5.47
19.417	1.15	2.50	2.977	I O				5.46
19.500	1.23	2.50	2.968	I O				5.45
19.583	1.22	2.50	2.959	I O				5.44
19.667	1.10	2.50	2.950	I O				5.43
19.750	1.05	2.50	2.940	I O				5.41
19.833	0.99	2.50	2.930	I O				5.40
19.917	0.84	2.50	2.919	I O				5.39
20.000	0.76	2.50	2.908	I O				5.37
20.083	0.77	2.50	2.896	I O				5.36
20.167	0.89	2.50	2.884	I O				5.34
20.250	0.94	2.50	2.873	I O				5.33
20.333	0.96	2.50	2.863	I O				5.31
20.417	0.97	2.50	2.852	I O				5.30
20.500	0.98	2.50	2.841	I O				5.29
20.583	0.98	2.50	2.831	I O				5.27
20.667	0.98	2.50	2.821	I O				5.26
20.750	0.99	2.50	2.810	I O				5.25
20.833	0.95	2.50	2.800	I O				5.23
20.917	0.82	2.50	2.789	I O				5.22
21.000	0.75	2.50	2.777	I O				5.20
21.083	0.75	2.50	2.765	I O				5.19
21.167	0.88	2.50	2.753	I O				5.17
21.250	0.94	2.50	2.742	I O				5.16
21.333	0.92	2.50	2.731	I O				5.14
21.417	0.79	2.50	2.720	I O				5.13
21.500	0.73	2.50	2.708	I O				5.11
21.583	0.74	2.50	2.696	I O				5.10

21.667	0.87	2.50	2.684	| I	O|	|	|	5.08
21.750	0.93	2.50	2.673	| I	O|	|	|	5.07
21.833	0.92	2.50	2.662	| I	O|	|	|	5.05
21.917	0.79	2.50	2.651	| I	O|	|	|	5.04
22.000	0.73	2.50	2.639	| I	O|	|	|	5.02
22.083	0.74	2.50	2.627	| I	O|	|	|	5.01
22.167	0.87	2.50	2.615	| I	O|	|	|	4.99
22.250	0.93	2.50	2.604	| I	O|	|	|	4.98
22.333	0.92	2.50	2.593	| I	O|	|	|	4.96
22.417	0.79	2.50	2.582	| I	O|	|	|	4.95
22.500	0.73	2.50	2.570	| I	O|	|	|	4.93
22.583	0.70	2.50	2.558	| I	O|	|	|	4.91
22.667	0.69	2.50	2.545	|I	O|	|	|	4.89
22.750	0.68	2.50	2.533	|I	O|	|	|	4.88
22.833	0.68	2.50	2.520	|I	O|	|	|	4.86
22.917	0.67	2.50	2.508	|I	O|	|	|	4.84
23.000	0.67	2.50	2.495	|I	O|	|	|	4.82
23.083	0.67	2.50	2.482	|I	O|	|	|	4.81
23.167	0.66	2.50	2.470	|I	O|	|	|	4.79
23.250	0.66	2.50	2.457	|I	O|	|	|	4.77
23.333	0.66	2.50	2.444	|I	O|	|	|	4.75
23.417	0.66	2.50	2.432	|I	O|	|	|	4.73
23.500	0.66	2.50	2.419	|I	O|	|	|	4.72
23.583	0.66	2.50	2.406	|I	O|	|	|	4.70
23.667	0.66	2.50	2.394	|I	O|	|	|	4.68
23.750	0.66	2.50	2.381	|I	O|	|	|	4.66
23.833	0.66	2.50	2.368	|I	O|	|	|	4.65
23.917	0.66	2.50	2.356	|I	O|	|	|	4.63
24.000	0.66	2.50	2.343	|I	O|	|	|	4.61
24.083	0.59	2.50	2.330	|I	O|	|	|	4.59
24.167	0.31	2.50	2.316	I	O|	|	|	4.57
24.250	0.16	2.50	2.301	I	O|	|	|	4.55
24.333	0.11	2.50	2.284	I	O|	|	|	4.53
24.417	0.07	2.50	2.268	I	O|	|	|	4.50
24.500	0.05	2.50	2.251	I	O|	|	|	4.48
24.583	0.03	2.50	2.234	I	O|	|	|	4.46
24.667	0.02	2.50	2.217	I	O|	|	|	4.43
24.750	0.01	2.50	2.200	I	O|	|	|	4.41
24.833	0.01	2.50	2.183	I	O|	|	|	4.38
24.917	0.00	2.50	2.165	I	O|	|	|	4.36
25.000	0.00	2.50	2.148	I	O|	|	|	4.33
25.083	0.00	2.50	2.131	I	O|	|	|	4.31
25.167	0.00	2.50	2.114	I	O|	|	|	4.29
25.250	0.00	2.50	2.097	I	O|	|	|	4.26
25.333	0.00	2.50	2.079	I	O|	|	|	4.24
25.417	0.00	2.50	2.062	I	O|	|	|	4.21
25.500	0.00	2.50	2.045	I	O|	|	|	4.19
25.583	0.00	2.50	2.028	I	O|	|	|	4.16
25.667	0.00	2.50	2.010	I	O|	|	|	4.14
25.750	0.00	2.50	1.993	I	O|	|	|	4.12
25.833	0.00	2.50	1.976	I	O|	|	|	4.09
25.917	0.00	2.50	1.959	I	O|	|	|	4.07
26.000	0.00	2.50	1.942	I	O|	|	|	4.04
26.083	0.00	2.50	1.924	I	O|	|	|	4.02
26.167	0.00	2.50	1.907	I	O|	|	|	3.99
26.250	0.00	2.50	1.890	I	O|	|	|	3.97

26.333	0.00	2.50	1.873	I	O				3.94
26.417	0.00	2.50	1.856	I	O				3.91
26.500	0.00	2.50	1.838	I	O				3.89
26.583	0.00	2.50	1.821	I	O				3.86
26.667	0.00	2.50	1.804	I	O				3.83
26.750	0.00	2.50	1.787	I	O				3.81
26.833	0.00	2.50	1.769	I	O				3.78
26.917	0.00	2.50	1.752	I	O				3.75
27.000	0.00	2.50	1.735	I	O				3.73
27.083	0.00	2.50	1.718	I	O				3.70
27.167	0.00	2.50	1.701	I	O				3.67
27.250	0.00	2.50	1.683	I	O				3.65
27.333	0.00	2.50	1.666	I	O				3.62
27.417	0.00	2.50	1.649	I	O				3.59
27.500	0.00	2.50	1.632	I	O				3.57
27.583	0.00	2.50	1.614	I	O				3.54
27.667	0.00	2.50	1.597	I	O				3.51
27.750	0.00	2.50	1.580	I	O				3.49
27.833	0.00	2.50	1.563	I	O				3.46
27.917	0.00	2.50	1.546	I	O				3.43
28.000	0.00	2.50	1.528	I	O				3.40
28.083	0.00	2.50	1.511	I	O				3.38
28.167	0.00	2.50	1.494	I	O				3.35
28.250	0.00	2.50	1.477	I	O				3.32
28.333	0.00	2.50	1.460	I	O				3.30
28.417	0.00	2.50	1.442	I	O				3.27
28.500	0.00	2.50	1.425	I	O				3.24
28.583	0.00	2.50	1.408	I	O				3.22
28.667	0.00	2.50	1.391	I	O				3.19
28.750	0.00	2.50	1.373	I	O				3.16
28.833	0.00	2.50	1.356	I	O				3.14
28.917	0.00	2.50	1.339	I	O				3.11
29.000	0.00	2.50	1.322	I	O				3.08
29.083	0.00	2.50	1.305	I	O				3.06
29.167	0.00	2.50	1.287	I	O				3.03
29.250	0.00	2.50	1.270	I	O				3.00
29.333	0.00	2.50	1.253	I	O				2.97
29.417	0.00	2.50	1.236	I	O				2.94
29.500	0.00	2.50	1.218	I	O				2.91
29.583	0.00	2.50	1.201	I	O				2.88
29.667	0.00	2.50	1.184	I	O				2.85
29.750	0.00	2.50	1.167	I	O				2.82
29.833	0.00	2.50	1.150	I	O				2.80
29.917	0.00	2.50	1.132	I	O				2.77
30.000	0.00	2.50	1.115	I	O				2.74
30.083	0.00	2.50	1.098	I	O				2.71
30.167	0.00	2.50	1.081	I	O				2.68
30.250	0.00	2.50	1.064	I	O				2.65
30.333	0.00	2.50	1.046	I	O				2.62
30.417	0.00	2.50	1.029	I	O				2.59
30.500	0.00	2.50	1.012	I	O				2.56
30.583	0.00	2.50	0.995	I	O				2.53
30.667	0.00	2.50	0.977	I	O				2.50
30.750	0.00	2.50	0.960	I	O				2.47
30.833	0.00	2.50	0.943	I	O				2.44
30.917	0.00	2.50	0.926	I	O				2.41

31.000	0.00	2.50	0.909	I	O	|	|	|	2.38
31.083	0.00	2.50	0.891	I	O	|	|	|	2.35
31.167	0.00	2.50	0.874	I	O	|	|	|	2.32
31.250	0.00	2.50	0.857	I	O	|	|	|	2.29
31.333	0.00	2.50	0.840	I	O	|	|	|	2.26
31.417	0.00	2.50	0.822	I	O	|	|	|	2.23
31.500	0.00	2.50	0.805	I	O	|	|	|	2.20
31.583	0.00	2.50	0.788	I	O	|	|	|	2.17
31.667	0.00	2.50	0.771	I	O	|	|	|	2.14
31.750	0.00	2.50	0.754	I	O	|	|	|	2.11
31.833	0.00	2.50	0.736	I	O	|	|	|	2.08
31.917	0.00	2.50	0.719	I	O	|	|	|	2.05
32.000	0.00	2.50	0.702	I	O	|	|	|	2.02
32.083	0.00	2.50	0.685	I	O	|	|	|	1.99
32.167	0.00	2.50	0.668	I	O	|	|	|	1.96
32.250	0.00	2.50	0.650	I	O	|	|	|	1.92
32.333	0.00	2.50	0.633	I	O	|	|	|	1.89
32.417	0.00	2.50	0.616	I	O	|	|	|	1.85
32.500	0.00	2.50	0.599	I	O	|	|	|	1.82
32.583	0.00	2.50	0.581	I	O	|	|	|	1.78
32.667	0.00	2.50	0.564	I	O	|	|	|	1.75
32.750	0.00	2.50	0.547	I	O	|	|	|	1.71
32.833	0.00	2.50	0.530	I	O	|	|	|	1.68
32.917	0.00	2.50	0.513	I	O	|	|	|	1.65
33.000	0.00	2.50	0.495	I	O	|	|	|	1.61
33.083	0.00	2.50	0.478	I	O	|	|	|	1.58
33.167	0.00	2.50	0.461	I	O	|	|	|	1.54
33.250	0.00	2.50	0.444	I	O	|	|	|	1.51
33.333	0.00	2.50	0.426	I	O	|	|	|	1.47
33.417	0.00	2.50	0.409	I	O	|	|	|	1.44
33.500	0.00	2.50	0.392	I	O	|	|	|	1.40
33.583	0.00	2.50	0.375	I	O	|	|	|	1.37
33.667	0.00	2.50	0.358	I	O	|	|	|	1.34
33.750	0.00	2.50	0.340	I	O	|	|	|	1.30
33.833	0.00	2.50	0.323	I	O	|	|	|	1.27
33.917	0.00	2.50	0.306	I	O	|	|	|	1.23
34.000	0.00	2.50	0.289	I	O	|	|	|	1.20
34.083	0.00	2.50	0.272	I	O	|	|	|	1.16
34.167	0.00	2.50	0.254	I	O	|	|	|	1.13
34.250	0.00	2.50	0.237	I	O	|	|	|	1.09
34.333	0.00	2.50	0.220	I	O	|	|	|	1.06
34.417	0.00	2.50	0.203	I	O	|	|	|	1.03
34.500	0.00	2.50	0.185	I	O	|	|	|	0.98
34.583	0.00	2.50	0.168	I	O	|	|	|	0.92
34.667	0.00	2.50	0.151	I	O	|	|	|	0.86
34.750	0.00	2.50	0.134	I	O	|	|	|	0.80
34.833	0.00	2.50	0.117	I	O	|	|	|	0.74
34.917	0.00	2.50	0.099	I	O	|	|	|	0.69
35.000	0.00	2.50	0.082	I	O	|	|	|	0.63
35.083	0.00	2.50	0.065	I	O	|	|	|	0.57
35.167	0.00	2.50	0.048	I	O	|	|	|	0.51
35.250	0.00	2.50	0.030	I	O	|	|	|	0.36
35.333	0.00	2.50	0.013	I	O	|	|	|	0.21
35.417	0.00	1.21	0.000	I	O	|	|	|	0.05
35.500	0.00	0.00	0.000	O		|	|	|	0.00

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**************************HYDROGRAPH DATA**************************
                Number of intervals =   426
                Time interval =    5.0 (Min.)
                Maximum/Peak flow rate =        2.500 (CFS)
                Total volume =       6.857 (Ac.Ft)
        Status of hydrographs being held in storage
                   Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
        Peak (CFS)      0.000     0.000     0.000     0.000     0.000
        Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
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FLOOD HYDROGRAPH ROUTING PROGRAM

Study date: 08/06/21

21-0026 - MENIFEE COMMERCE CENTER
BASIN ROUTING CALCULATIONS
2-YEAR, 24-HOUR STORM EVENT: BUILDING 2
FN: ROUTE242.OUT TSW

Program License Serial Number 4010

********** HYDROGRAPH INFORMATION **********

From study/file name: ONSITEPROP242.rte
**********HYDROGRAPH DATA**********
Number of intervals = 294
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 3.693 (CFS)
Total volume = 1.127 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

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Process from Point/Station 1.000 to Point/Station 2.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 294
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)

0.000	0.000	0.000	0.000	0.000
0.100	0.004	1.000	0.001	0.007
0.500	0.079	1.000	0.076	0.082
1.000	0.182	1.000	0.179	0.185
2.000	0.406	1.000	0.403	0.409
3.000	0.651	1.000	0.648	0.654
4.000	0.918	1.000	0.915	0.921
5.000	1.208	1.000	1.205	1.211
6.000	1.522	1.000	1.519	1.525
6.500	1.688	1.000	1.685	1.691
7.100	1.896	2.800	1.886	1.906
7.500	2.039	9.165	2.007	2.071
8.000	2.223	21.325	2.150	2.296

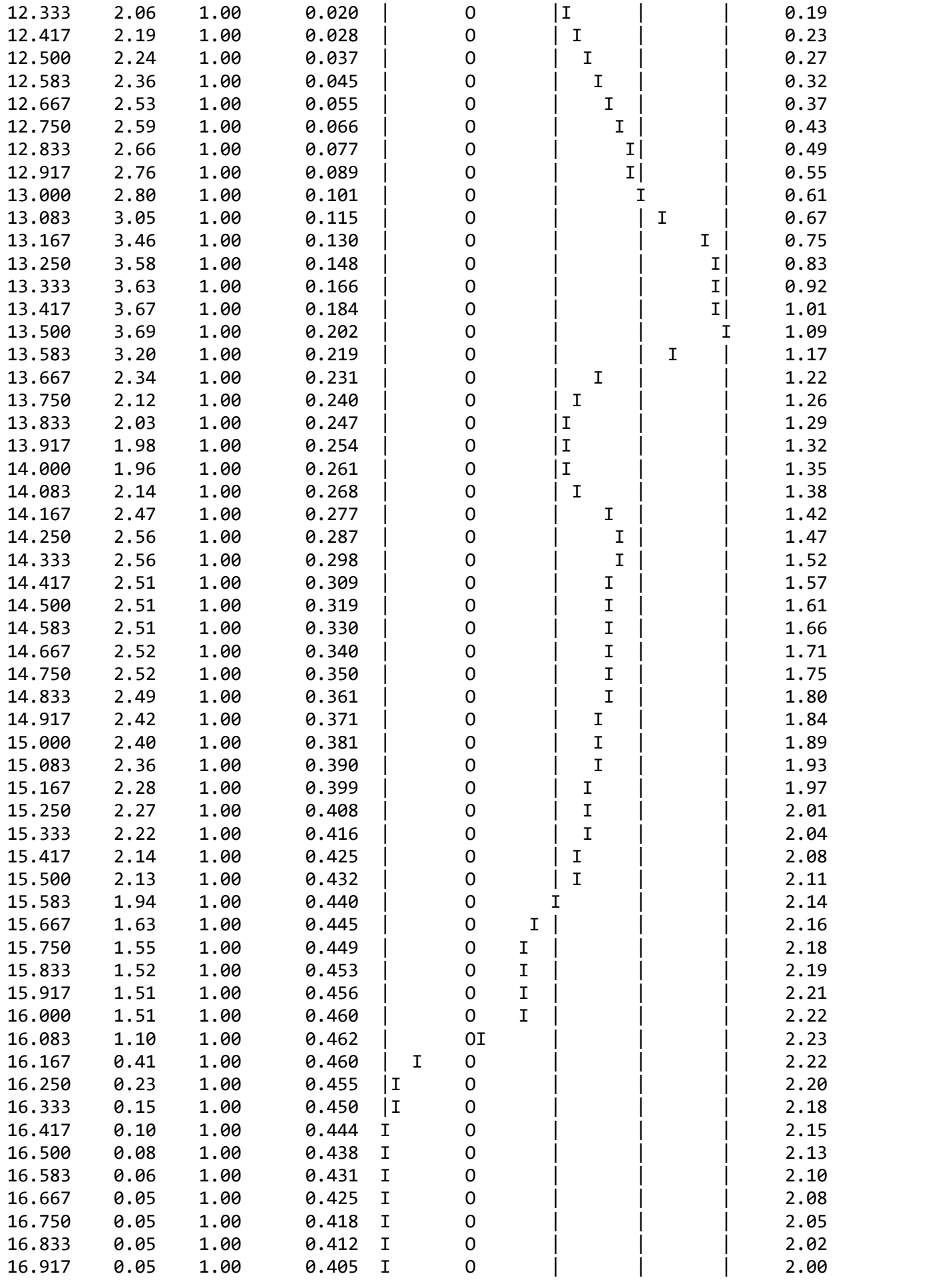
Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	0.9	1.85	2.77	3.69	Depth (Ft.)
0.083	0.01	0.00	0.000	O	|	|	|	|	0.00
0.167	0.03	0.02	0.000	O	|	|	|	|	0.00
0.250	0.03	0.03	0.000	O	|	|	|	|	0.00
0.333	0.04	0.03	0.000	O	|	|	|	|	0.00
0.417	0.04	0.04	0.000	O	|	|	|	|	0.00
0.500	0.05	0.05	0.000	O	|	|	|	|	0.00
0.583	0.05	0.05	0.000	O	|	|	|	|	0.00
0.667	0.05	0.05	0.000	O	|	|	|	|	0.00
0.750	0.05	0.05	0.000	O	|	|	|	|	0.00
0.833	0.05	0.05	0.000	O	|	|	|	|	0.01
0.917	0.06	0.06	0.000	O	|	|	|	|	0.01
1.000	0.06	0.06	0.000	O	|	|	|	|	0.01
1.083	0.06	0.06	0.000	O	|	|	|	|	0.01
1.167	0.05	0.06	0.000	O	|	|	|	|	0.01
1.250	0.05	0.05	0.000	O	|	|	|	|	0.01
1.333	0.05	0.05	0.000	O	|	|	|	|	0.01
1.417	0.05	0.05	0.000	O	|	|	|	|	0.01
1.500	0.05	0.05	0.000	O	|	|	|	|	0.00
1.583	0.05	0.05	0.000	O	|	|	|	|	0.00
1.667	0.05	0.05	0.000	O	|	|	|	|	0.00
1.750	0.05	0.05	0.000	O	|	|	|	|	0.00
1.833	0.05	0.05	0.000	O	|	|	|	|	0.01
1.917	0.06	0.06	0.000	O	|	|	|	|	0.01
2.000	0.06	0.06	0.000	O	|	|	|	|	0.01
2.083	0.06	0.06	0.000	O	|	|	|	|	0.01
2.167	0.07	0.07	0.000	O	|	|	|	|	0.01
2.250	0.07	0.07	0.000	O	|	|	|	|	0.01
2.333	0.07	0.07	0.000	O	|	|	|	|	0.01
2.417	0.07	0.07	0.000	O	|	|	|	|	0.01
2.500	0.07	0.07	0.000	O	|	|	|	|	0.01
2.583	0.07	0.07	0.000	O	|	|	|	|	0.01
2.667	0.08	0.07	0.000	O	|	|	|	|	0.01
2.750	0.08	0.08	0.000	O	|	|	|	|	0.01
2.833	0.08	0.08	0.000	O	|	|	|	|	0.01
2.917	0.08	0.08	0.000	O	|	|	|	|	0.01

3.000	0.08	0.08	0.000	O	|	|	|	0.01
3.083	0.08	0.08	0.000	O	|	|	|	0.01
3.167	0.08	0.08	0.000	O	|	|	|	0.01
3.250	0.08	0.08	0.000	O	|	|	|	0.01
3.333	0.08	0.08	0.000	O	|	|	|	0.01
3.417	0.08	0.08	0.000	O	|	|	|	0.01
3.500	0.08	0.08	0.000	O	|	|	|	0.01
3.583	0.08	0.08	0.000	O	|	|	|	0.01
3.667	0.08	0.08	0.000	O	|	|	|	0.01
3.750	0.08	0.08	0.000	O	|	|	|	0.01
3.833	0.09	0.08	0.000	O	|	|	|	0.01
3.917	0.09	0.09	0.000	O	|	|	|	0.01
4.000	0.10	0.10	0.000	O	|	|	|	0.01
4.083	0.10	0.10	0.000	O	|	|	|	0.01
4.167	0.10	0.10	0.000	O	|	|	|	0.01
4.250	0.10	0.10	0.000	O	|	|	|	0.01
4.333	0.10	0.10	0.000	O	|	|	|	0.01
4.417	0.11	0.11	0.000	O	|	|	|	0.01
4.500	0.11	0.11	0.000	O	|	|	|	0.01
4.583	0.11	0.11	0.000	O	|	|	|	0.01
4.667	0.11	0.11	0.000	O	|	|	|	0.01
4.750	0.12	0.11	0.000	O	|	|	|	0.01
4.833	0.12	0.12	0.000	|O	|	|	|	0.01
4.917	0.13	0.12	0.000	|O	|	|	|	0.01
5.000	0.13	0.13	0.001	|O	|	|	|	0.01
5.083	0.12	0.13	0.001	|O	|	|	|	0.01
5.167	0.11	0.11	0.000	O	|	|	|	0.01
5.250	0.10	0.10	0.000	O	|	|	|	0.01
5.333	0.11	0.10	0.000	O	|	|	|	0.01
5.417	0.11	0.11	0.000	O	|	|	|	0.01
5.500	0.11	0.11	0.000	O	|	|	|	0.01
5.583	0.12	0.12	0.000	|O	|	|	|	0.01
5.667	0.13	0.12	0.000	|O	|	|	|	0.01
5.750	0.13	0.13	0.001	|O	|	|	|	0.01
5.833	0.13	0.13	0.001	|O	|	|	|	0.01
5.917	0.13	0.13	0.001	|O	|	|	|	0.01
6.000	0.13	0.13	0.001	|O	|	|	|	0.01
6.083	0.14	0.13	0.001	|O	|	|	|	0.01
6.167	0.14	0.14	0.001	|O	|	|	|	0.01
6.250	0.15	0.14	0.001	|O	|	|	|	0.01
6.333	0.15	0.15	0.001	|O	|	|	|	0.01
6.417	0.15	0.15	0.001	|O	|	|	|	0.01
6.500	0.15	0.15	0.001	|O	|	|	|	0.01
6.583	0.15	0.15	0.001	|O	|	|	|	0.02
6.667	0.16	0.16	0.001	|O	|	|	|	0.02
6.750	0.16	0.16	0.001	|O	|	|	|	0.02
6.833	0.16	0.16	0.001	|O	|	|	|	0.02
6.917	0.16	0.16	0.001	|O	|	|	|	0.02
7.000	0.16	0.16	0.001	|O	|	|	|	0.02
7.083	0.16	0.16	0.001	|O	|	|	|	0.02
7.167	0.16	0.16	0.001	|O	|	|	|	0.02
7.250	0.16	0.16	0.001	|O	|	|	|	0.02
7.333	0.17	0.17	0.001	|O	|	|	|	0.02
7.417	0.18	0.17	0.001	|O	|	|	|	0.02
7.500	0.18	0.18	0.001	|O	|	|	|	0.02
7.583	0.18	0.18	0.001	|O	|	|	|	0.02

```
 7.667    0.19    0.19      0.001  |O      |       |       |       |     0.02
 7.750    0.20    0.19      0.001  |O      |       |       |       |     0.02
 7.833    0.20    0.20      0.001  |O      |       |       |       |     0.02
 7.917    0.21    0.20      0.001  |O      |       |       |       |     0.02
 8.000    0.21    0.21      0.001  |O      |       |       |       |     0.02
 8.083    0.22    0.22      0.001  |O      |       |       |       |     0.02
 8.167    0.24    0.23      0.001  |OI     |       |       |       |     0.02
 8.250    0.24    0.24      0.001  | O     |       |       |       |     0.02
 8.333    0.25    0.24      0.001  | O     |       |       |       |     0.02
 8.417    0.25    0.25      0.001  | O     |       |       |       |     0.02
 8.500    0.25    0.25      0.001  | O     |       |       |       |     0.02
 8.583    0.25    0.25      0.001  | O     |       |       |       |     0.02
 8.667    0.26    0.25      0.001  | O     |       |       |       |     0.03
 8.750    0.26    0.26      0.001  | O     |       |       |       |     0.03
 8.833    0.28    0.27      0.001  | O     |       |       |       |     0.03
 8.917    0.30    0.29      0.001  | O     |       |       |       |     0.03
 9.000    0.32    0.31      0.001  | O     |       |       |       |     0.03
 9.083    0.43    0.37      0.001  |  O    |       |       |       |     0.04
 9.167    0.60    0.50      0.002  |   OI  |       |       |       |     0.05
 9.250    0.65    0.62      0.002  |    O  |       |       |       |     0.06
 9.333    0.73    0.68      0.003  |    OI |       |       |       |     0.07
 9.417    0.83    0.77      0.003  |     OI|       |       |       |     0.08
 9.500    0.87    0.84      0.003  |      O|       |       |       |     0.08
 9.583    0.94    0.90      0.004  |      OI       |       |       |     0.09
 9.667    1.03    0.98      0.004  |       O       |       |       |     0.10
 9.750    1.07    1.00      0.004  |       OI      |       |       |     0.10
 9.833    1.13    1.00      0.005  |       OI      |       |       |     0.11
 9.917    1.23    1.00      0.006  |       O I     |       |       |     0.11
10.000    1.27    1.00      0.008  |       O I     |       |       |     0.12
10.083    0.99    1.00      0.009  |       O       |       |       |     0.13
10.167    0.49    1.00      0.007  |   I   O       |       |       |     0.12
10.250    0.36    0.88      0.004  |  I   O|       |       |       |     0.09
10.333    0.30    0.37      0.001  | IO    |       |       |       |     0.04
10.417    0.27    0.30      0.001  | O     |       |       |       |     0.03
10.500    0.26    0.27      0.001  | O     |       |       |       |     0.03
10.583    0.47    0.36      0.001  |  OI   |       |       |       |     0.04
10.667    0.86    0.64      0.003  |    O I|       |       |       |     0.06
10.750    0.97    0.89      0.004  |      OI       |       |       |     0.09
10.833    1.02    0.99      0.004  |       O       |       |       |     0.10
10.917    1.06    1.00      0.004  |       OI      |       |       |     0.10
11.000    1.08    1.00      0.005  |       OI      |       |       |     0.10
11.083    1.05    1.00      0.005  |       OI      |       |       |     0.11
11.167    0.98    1.00      0.005  |       O       |       |       |     0.11
11.250    0.97    1.00      0.005  |       O       |       |       |     0.11
11.333    0.98    1.00      0.005  |       O       |       |       |     0.11
11.417    0.98    1.00      0.005  |       O       |       |       |     0.10
11.500    0.99    1.00      0.005  |       O       |       |       |     0.10
11.583    0.91    1.00      0.004  |      IO       |       |       |     0.10
11.667    0.76    0.90      0.004  |     IO|       |       |       |     0.09
11.750    0.73    0.75      0.003  |     O |       |       |       |     0.08
11.833    0.77    0.75      0.003  |     O |       |       |       |     0.07
11.917    0.85    0.80      0.003  |     OI|       |       |       |     0.08
12.000    0.87    0.85      0.003  |      O|       |       |       |     0.09
12.083    1.21    1.00      0.004  |       O I     |       |       |     0.10
12.167    1.78    1.00      0.008  |       O      I|       |       |     0.12
12.250    1.94    1.00      0.014  |       O       I       |       |     0.15
```



17.000	0.05	1.00	0.399	I	O	|	|	|	1.97
17.083	0.06	1.00	0.392	I	O	|	|	|	1.94
17.167	0.07	1.00	0.386	I	O	|	|	|	1.91
17.250	0.08	1.00	0.379	I	O	|	|	|	1.88
17.333	0.08	1.00	0.373	I	O	|	|	|	1.85
17.417	0.08	1.00	0.367	I	O	|	|	|	1.82
17.500	0.08	1.00	0.360	I	O	|	|	|	1.80
17.583	0.08	1.00	0.354	I	O	|	|	|	1.77
17.667	0.08	1.00	0.348	I	O	|	|	|	1.74
17.750	0.08	1.00	0.341	I	O	|	|	|	1.71
17.833	0.08	1.00	0.335	I	O	|	|	|	1.68
17.917	0.07	1.00	0.329	I	O	|	|	|	1.65
18.000	0.07	1.00	0.322	I	O	|	|	|	1.63
18.083	0.07	1.00	0.316	I	O	|	|	|	1.60
18.167	0.07	1.00	0.309	I	O	|	|	|	1.57
18.250	0.07	1.00	0.303	I	O	|	|	|	1.54
18.333	0.07	1.00	0.296	I	O	|	|	|	1.51
18.417	0.07	1.00	0.290	I	O	|	|	|	1.48
18.500	0.07	1.00	0.284	I	O	|	|	|	1.45
18.583	0.06	1.00	0.277	I	O	|	|	|	1.42
18.667	0.05	1.00	0.271	I	O	|	|	|	1.40
18.750	0.05	1.00	0.264	I	O	|	|	|	1.37
18.833	0.05	1.00	0.258	I	O	|	|	|	1.34
18.917	0.04	1.00	0.251	I	O	|	|	|	1.31
19.000	0.03	1.00	0.244	I	O	|	|	|	1.28
19.083	0.04	1.00	0.238	I	O	|	|	|	1.25
19.167	0.05	1.00	0.231	I	O	|	|	|	1.22
19.250	0.05	1.00	0.224	I	O	|	|	|	1.19
19.333	0.05	1.00	0.218	I	O	|	|	|	1.16
19.417	0.06	1.00	0.211	I	O	|	|	|	1.13
19.500	0.06	1.00	0.205	I	O	|	|	|	1.10
19.583	0.06	1.00	0.199	I	O	|	|	|	1.07
19.667	0.05	1.00	0.192	I	O	|	|	|	1.04
19.750	0.05	1.00	0.186	I	O	|	|	|	1.02
19.833	0.05	1.00	0.179	I	O	|	|	|	0.99
19.917	0.04	1.00	0.172	I	O	|	|	|	0.95
20.000	0.03	1.00	0.166	I	O	|	|	|	0.92
20.083	0.04	1.00	0.159	I	O	|	|	|	0.89
20.167	0.05	1.00	0.152	I	O	|	|	|	0.86
20.250	0.05	1.00	0.146	I	O	|	|	|	0.82
20.333	0.05	1.00	0.139	I	O	|	|	|	0.79
20.417	0.05	1.00	0.133	I	O	|	|	|	0.76
20.500	0.05	1.00	0.126	I	O	|	|	|	0.73
20.583	0.05	1.00	0.120	I	O	|	|	|	0.70
20.667	0.05	1.00	0.113	I	O	|	|	|	0.67
20.750	0.05	1.00	0.107	I	O	|	|	|	0.63
20.833	0.04	1.00	0.100	I	O	|	|	|	0.60
20.917	0.04	1.00	0.093	I	O	|	|	|	0.57
21.000	0.03	1.00	0.087	I	O	|	|	|	0.54
21.083	0.04	1.00	0.080	I	O	|	|	|	0.51
21.167	0.05	1.00	0.074	I	O	|	|	|	0.47
21.250	0.05	1.00	0.067	I	O	|	|	|	0.44
21.333	0.04	1.00	0.060	I	O	|	|	|	0.40
21.417	0.04	1.00	0.054	I	O	|	|	|	0.37
21.500	0.03	1.00	0.047	I	O	|	|	|	0.33
21.583	0.04	1.00	0.041	I	O	|	|	|	0.29

21.667	0.05	1.00	0.034	I	O	|	|	|	0.26
21.750	0.05	1.00	0.027	I	O	|	|	|	0.22
21.833	0.04	1.00	0.021	I	O	|	|	|	0.19
21.917	0.04	1.00	0.014	I	O	|	|	|	0.15
22.000	0.03	1.00	0.008	I	O	|	|	|	0.12
22.083	0.04	0.59	0.002	I	O |		|	|	0.06
22.167	0.05	0.08	0.000	O	|		|	|	0.01
22.250	0.05	0.05	0.000	O	|		|	|	0.00
22.333	0.04	0.05	0.000	O	|		|	|	0.00
22.417	0.04	0.04	0.000	O	|		|	|	0.00
22.500	0.03	0.04	0.000	O	|		|	|	0.00
22.583	0.03	0.03	0.000	O	|		|	|	0.00
22.667	0.03	0.03	0.000	O	|		|	|	0.00
22.750	0.03	0.03	0.000	O	|		|	|	0.00
22.833	0.03	0.03	0.000	O	|		|	|	0.00
22.917	0.03	0.03	0.000	O	|		|	|	0.00
23.000	0.03	0.03	0.000	O	|		|	|	0.00
23.083	0.03	0.03	0.000	O	|		|	|	0.00
23.167	0.03	0.03	0.000	O	|		|	|	0.00
23.250	0.03	0.03	0.000	O	|		|	|	0.00
23.333	0.03	0.03	0.000	O	|		|	|	0.00
23.417	0.03	0.03	0.000	O	|		|	|	0.00
23.500	0.03	0.03	0.000	O	|		|	|	0.00
23.583	0.03	0.03	0.000	O	|		|	|	0.00
23.667	0.03	0.03	0.000	O	|		|	|	0.00
23.750	0.03	0.03	0.000	O	|		|	|	0.00
23.833	0.03	0.03	0.000	O	|		|	|	0.00
23.917	0.03	0.03	0.000	O	|		|	|	0.00
24.000	0.03	0.03	0.000	O	|		|	|	0.00
24.083	0.02	0.03	0.000	O	|		|	|	0.00
24.167	0.01	0.02	0.000	O	|		|	|	0.00
24.250	0.00	0.01	0.000	O	|		|	|	0.00
24.333	0.00	0.00	0.000	O	|		|	|	0.00
24.417	0.00	0.00	0.000	O	|		|	|	0.00
24.500	0.00	0.00	0.000	O	|		|	|	0.00
24.583	0.00	0.00	0.000	O	|		|	|	0.00

**********HYDROGRAPH DATA**********

Number of intervals = 295
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 1.000 (CFS)
Total volume = 1.127 (Ac.Ft)

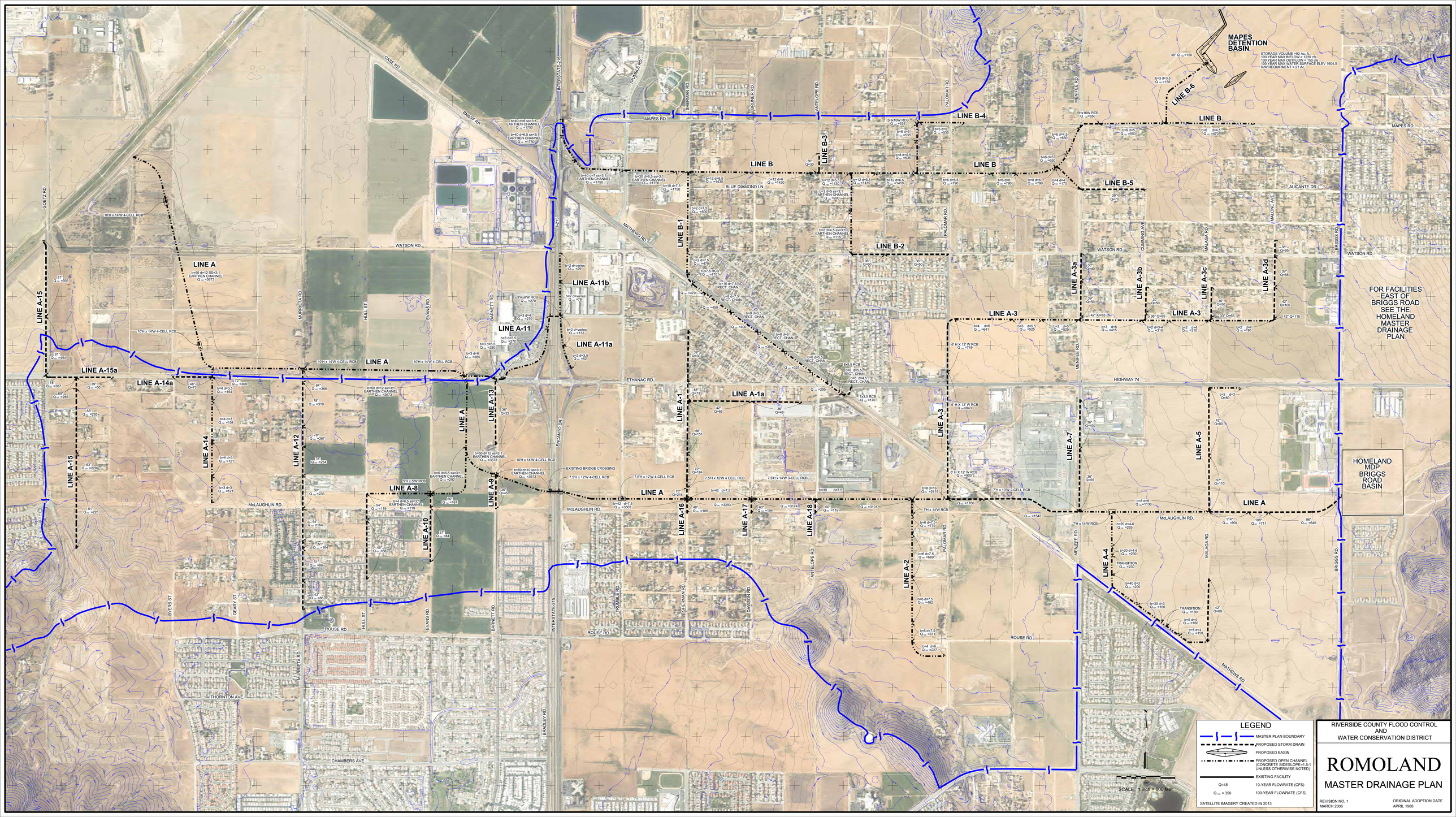
Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

APPENDIX C – REFERENCES

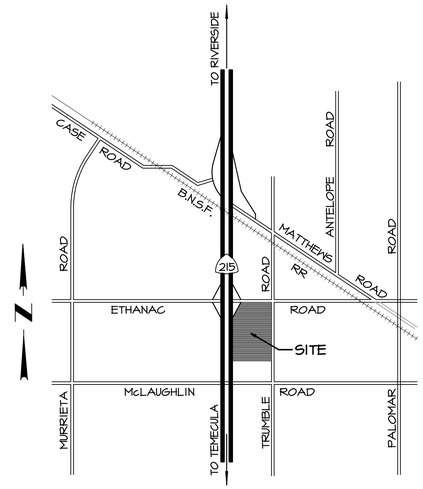
ROMOLAND MDP


MAPES DETENTION BASIN
STORAGE VOLUME =92 Ac.-ft.
100 YEAR MAX INFLOW = 1230 cfs
100 YEAR MAX OUTFLOW = 150 cfs
100 YEAR MAX WATER SURFACE ELEV 1604.5
R/W REQUIRMENT = 21 Ac.
LINE A
LINE A-1
LINE A-1a
LINE A-2
LINE A-3
LINE A-3a
LINE A-3b
LINE A-3c
LINE A-3d
LINE A-4
LINE A-5
LINE A-7
LINE A-8
LINE A-9
LINE A-10
LINE A-11
LINE A-11a
LINE A-11b
LINE A-12
LINE A-13
LINE A-14
LINE A-14a
LINE A-15
LINE A-15a
LINE A-16
LINE A-17
LINE A-18
LINE B
LINE B-1
LINE B-2
LINE B-3
LINE B-4
LINE B-5
LINE B-6
MAPES RD.
WATSON RD.
ETHANAC RD.
McLAUGHLIN RD.
ROUSE RD.
HIGHWAY 74
MATHEWS RD.
ALICANTE DR.
INTERSTATE-215
I-215
CASE RD.
BNASF RR
GOETZ RD.
MURRIETA RD.
HULL ST.
EVANS RD.
BARNETT RD.
ENCANTO DR.
BLUE DIAMOND LN.
PALOMAR RD.
MENIFEE RD.
MALONE AVE.
CUMMING AVE.
MALAGA RD.
BRIGGS RD.
ANTELOPE RD.
SHERMAN RD.
DAWSON RD.
PALMER RD.
TRUMBLE RD.
BYERS ST.
GEARY ST.
THORNTON AVE.
CHAMBERS AVE.
BRADLEY RD.
EXISTING BRIDGE CROSSING
TRANSITION
FOR FACILITIES EAST OF BRIGGS ROAD SEE THE HOMELAND MASTER DRAINAGE PLAN
HOMELAND MDP BRIGGS ROAD BASIN
LEGEND
MASTER PLAN BOUNDARY
PROPOSED STORM DRAIN
PROPOSED BASIN
PROPOSED OPEN CHANNEL (CONCRETE SIDESLOPE=1.5:1 UNLESS OTHERWISE NOTED)
EXISTING FACILITY
Q=45 10-YEAR FLOWRATE (CFS)
Q100 = 350 100-YEAR FLOWRATE (CFS)
SATELLITE IMAGERY CREATED IN 2013
SCALE: 1 inch = 600 feet
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
ROMOLAND
MASTER DRAINAGE PLAN
REVISION NO. 1
MARCH 2006
ORIGINAL ADOPTION DATE
APRIL 1988

OFFSITE HYDROLOGY MAP FOR ULTIMATE CONDITIONS FOR LINE A-21

LINE A-21 TRIBUTARY (ULTIMATE CONDITION)
DRAINAGE: WEST OF SHERMAN ROAD
Q100=144 CFS, TC=20 MIN.
AREA=65.1 ACRES

LINE A-21 INTERIM OFFSITE TRIBUTARY
(DRAINAGE WEST OF ANTELOPE ROAD)
Q100=254 CFS, TC=44.3 MIN.
AREA=192 ACRES



VICINITY MAP
N.T.S.
SEC 15, T5S, R3W.

OFFSITE TRIBUTARY
TO LINE A-20

ETHANAC ROAD

200
31

201
29

10.81AC
900'

8.97AC
670'

203
26

204
29

19.43AC
1330'

205
25.5

207
26

25.85AC
1440'

206
29

PLEASE REFER
TO THE ONSITE
HYDROLOGY MAP

INTERSTATE 215

ENCATO DR.

LINE A-19

LINE A-20

TRUMBLE RD.

LINE A-21

SHERMAN ROAD

LINE A-1

ULTIMATE CONDITION (LINE A-1):
Q100 = 334 CFS; TC=27.3 MIN.
AREA = 202 AC

HOMELAND-ROMOLAND LINE "A" CHANNEL

N

GRAPHIC SCALE 1"=100'
0 100 200 300

CITY OF PERRIS

OFFSITE HYDROLOGY MAP
FOR ULTIMATE CONDITIONS
TOWNE CENTER

SCALE 1"=100'	ALBERT A. WEBB ASSOCIATES	W.O. 06-0067
DATE 9/26/2016	CIVIL ENGINEERS 3788 McCRAY ST. RIVERSIDE CA. 92506 (951) 686-1070	SHEET
HYDROLOGY: TD		OF SHEETS
CHECKED: JCC/SRH		
PLN CK REF:	G:\2006\06-0067\Hyd\06-0067_ULT_OFFSITE_A-21.pro PLOT DATE: 9/26/2016	DWG. NO. 06-0067PP.PRO

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0
Rational Hydrology Study Date: 04/12/07
File:LineA21Off100yUltim.out

Offsite Hydrology for Line A-21 (Excludes Line A-1 tributary)
Ultimate Condition
Motte Towne Center, City of Perris, CA
W.O. 06-0067; 6 April 2007; TD

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 4010

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 100.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [Homeland-Winchester] area used.
10 year storm 10 minute intensity = 2.030(In/Hr)
10 year storm 60 minute intensity = 0.800(In/Hr)
100 year storm 10 minute intensity = 3.050(In/Hr)
100 year storm 60 minute intensity = 1.200(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.200(In/Hr)
Slope of intensity duration curve = 0.5200

++
Process from Point/Station 200.000 to Point/Station 201.000
**** INITIAL AREA EVALUATION ****

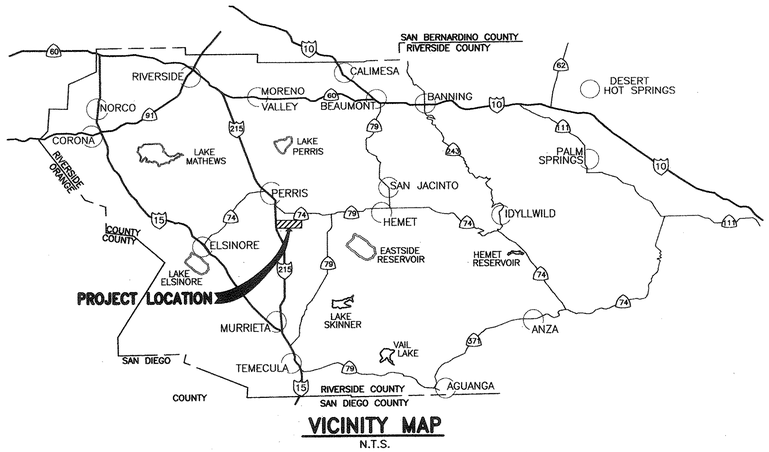
Initial area flow distance = 670.000(Ft.)
Top (of initial area) elevation = 31.000(Ft.)
Bottom (of initial area) elevation = 26.000(Ft.)
Difference in elevation = 5.000(Ft.)
Slope = 0.00746 s(percent)= 0.75
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 10.789 min.
Rainfall intensity = 2.929(In/Hr) for a 100.0 year storm

```
COMMERCIAL subarea type
Runoff Coefficient = 0.885
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =     23.242(CFS)
Total initial stream area =        8.970(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      201.000 to Point/Station      203.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =    29.000(Ft.)
Downstream point/station elevation =    26.000(Ft.)
Pipe length  =   900.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    23.242(CFS)
Nearest computed pipe diameter  =     30.00(In.)
Calculated individual pipe flow  =    23.242(CFS)
Normal flow depth in pipe =   24.09(In.)
Flow top width inside pipe =   23.86(In.)
Critical Depth =   19.69(In.)
Pipe flow velocity =      5.50(Ft/s)
Travel time through pipe =    2.73 min.
Time of concentration (TC) =    13.52 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      201.000 to Point/Station      203.000
**** SUBAREA FLOW ADDITION ****
________________________________________________________________________
COMMERCIAL subarea type
Runoff Coefficient = 0.883
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =    13.52 min.
Rainfall intensity =      2.605(In/Hr) for a   100.0 year storm
Subarea runoff =     24.868(CFS) for     10.810(Ac.)
Total runoff =     48.110(CFS)  Total area =      19.780(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      203.000 to Point/Station      205.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =    26.000(Ft.)
Downstream point/station elevation =    23.000(Ft.)
Pipe length  =   900.00(Ft.)   Manning's N = 0.013
```

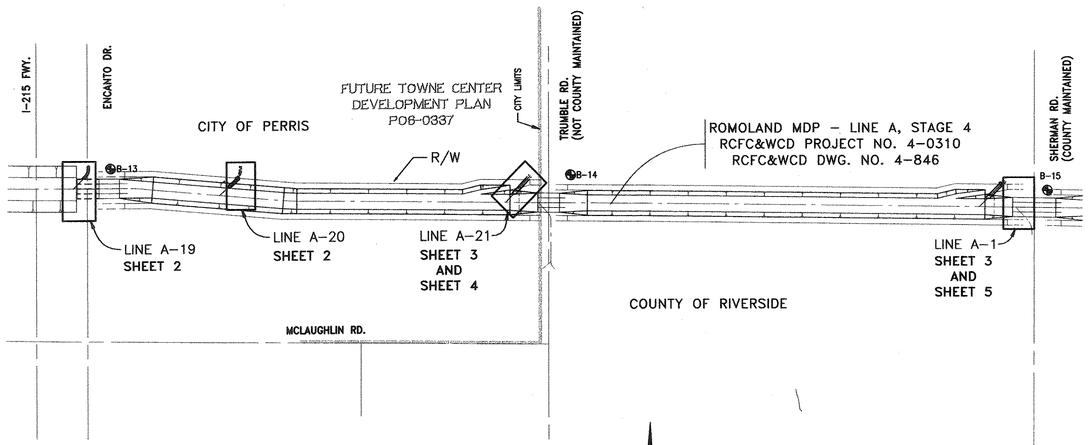
```
No. of pipes = 1  Required pipe flow  =    48.110(CFS)
Nearest computed pipe diameter  =     39.00(In.)
Calculated individual pipe flow  =    48.110(CFS)
Normal flow depth in pipe =   32.30(In.)
Flow top width inside pipe =   29.43(In.)
Critical Depth =   26.54(In.)
Pipe flow velocity =      6.55(Ft/s)
Travel time through pipe =    2.29 min.
Time of concentration (TC) =    15.81 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      204.000 to Point/Station      205.000
**** SUBAREA FLOW ADDITION ****
______________________________________________________________________________
COMMERCIAL subarea type
Runoff Coefficient = 0.882
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =    15.81 min.
Rainfall intensity =      2.401(In/Hr) for a   100.0 year storm
Subarea runoff =     41.150(CFS) for     19.430(Ac.)
Total runoff =     89.260(CFS)  Total area =      39.210(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      206.000 to Point/Station      207.000
**** SUBAREA FLOW ADDITION ****
______________________________________________________________________________
COMMERCIAL subarea type
Runoff Coefficient = 0.882
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =    15.81 min.
Rainfall intensity =      2.401(In/Hr) for a   100.0 year storm
Subarea runoff =     54.747(CFS) for     25.850(Ac.)
Total runoff =    144.007(CFS)  Total area =      65.060(Ac.)
End of computations, total study area =           65.06 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  69.0
```

LINE-A AS-BUILTS

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
ROMOLAND MDP-LINE A LATERALS (LINE A-1, LINE A-19, LINE A-20, LINE A-21)



VICINITY MAP
N.T.S.



MDP LINE A – STAGE 4 LATERALS

N

INDEX MAP
T.5S., R.3W. SECTIONS 14 & 15
N.T.S.

GENERAL NOTES

1. ALL STATIONING REFERS TO CENTERLINE OF CONSTRUCTION.
2. ALL CHANNEL/STORM DRAIN REFERENCES AND CROSS SECTIONS ARE TAKEN LOOKING DOWNSTREAM.
3. TOPOGRAPHY BY AERIAL PHOTOGRAPHS TAKEN AT AN ALTITUDE NOT TO EXCEED A FLYING HEIGHT TO CONTOUR INTERVAL RATIO OF 1800. PHOTOGRAPHY DATED 11-15-03
4. THE VERTICAL DATUM IS DERIVED FROM (NGVD 29). THE HORIZONTAL DATUM IS DERIVED FROM (NAD 83).
5. STANDARD DRAWINGS CALLED FOR ON THE PLAN & PROFILE SHALL CONFORM TO R.C.F.C. & W.C.D. STD. DRAWINGS, CALTRANS OR RIVERSIDE COUNTY TRANSPORTATION DEPARTMENT STANDARD PLANS.
6. ELEVATIONS AND LOCATIONS OF UTILITIES WERE OBTAINED FROM AVAILABLE INFORMATION AND ARE SHOWN APPROXIMATELY ON THESE PLANS. 48 HOURS BEFORE EXCAVATION CALL UNDERGROUND SERVICE ALERT AT 1-800-227-2600. ALL UTILITIES SHALL BE PROTECTED IN PLACE EXCEPT AS NOTED ON PLANS AND SPECIFICATIONS.
7. THE CONTRACTOR IS REQUIRED TO CONTACT ALL UTILITY AGENCIES REGARDING TEMPORARY SUPPORT AND SHORING REQUIREMENTS FOR THE VARIOUS UTILITY LINES SHOWN ON THESE PLANS.
8. ALL OPENINGS RESULTING FROM CUTTING OR PARTIAL REMOVAL OF EXIST. CULVERTS, PIPES, OR SIMILAR STRUCTURES TO BE ABANDONED, SHALL BE SEALED AT BOTH ENDS WITH 6" MIN. CLASS "B" CONCRETE OR REMOVED.
9. ALL RECONSTRUCTION, RESURFACING AND PAVEMENT DELINATION, CURBS, SIDEWALKS AND OTHER IMPROVEMENTS ARE TO BE RECONSTRUCTED IN KIND USING THE SAME STRUCTURAL SECTION, LOCATIONS AND ELEVATIONS AS THE EXISTING IMPROVEMENTS, UNLESS OTHERWISE NOTED.
10. ⊕ INDICATES APPROX. SOIL BORING LOCATION PER SOILS REPORT BY CHJ DATED APRIL 27, 2004.
11. ~~THE CONTRACTOR SHALL CONSTRUCT THE FLOOD CONTROL IMPROVEMENTS SHOWN ON THE DRAWINGS IN CONFORMANCE WITH THE REQUIREMENTS OF THE RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT'S MEMORANDUM OF UNDERSTANDING STANDARD SPECIFICATIONS DATED SEPTEMBER 1984, AND DESIGN MANUAL STANDARD DRAWINGS DATED APRIL 2004.~~
12. IF AN ENCROACHMENT PERMIT IS REQUIRED FROM RIVERSIDE COUNTY FLOOD CONTROL, THEN CONTACT ED LOTZ AT (951) 955-1266. AFTER THE PERMIT IS ISSUED THE DISTRICT MUST BE NOTIFIED ONE WEEK PRIOR TO CONSTRUCTION. PERMIT IS ALSO REQUIRED FROM PERRIS
13. IF CONSTRUCTION INSPECTION IS TO BE PERFORMED BY RIVERSIDE COUNTY FLOOD CONTROL, CONTACT DALE ANDERSON AT (951) 955-1288. THE DISTRICT MUST BE NOTIFIED TWENTY DAYS (20) PRIOR TO CONSTRUCTION.
14. PIPE BEDDING SHALL CONFORM TO RCFC&WCD STD. DWG. NO. M815 EXCEPT FOR COVER <2 FEET. FOR COVER <2 FEET, CONCRETE SLURRY (2000 PSI – 2 SACK) SHALL BE USED. THE ENTIRE TRENCH SHALL BE SLURRY EXTENDING 4 INCHES MINIMUM AND 12 INCHES MAXIMUM ABOVE THE TOP OF THE PIPE.
15. STATIONING FOR LATERALS AND CONNECTOR PIPE REFER TO THE CENTERLINE INTERSECTION STATIONS.

INDEX

SHEET NO.:

R.C.F.C. & W.C.D. STANDARD DRAWINGS

JS 226 JUNCTION STRUCTURE No. 1
JS 231 JUNCTION STRUCTURE No. 6
M 816 CONCRETE BULKHEAD

CALTRANS STANDARD DRAWINGS

D80 – CAST IN PLACE REINFORCED CONCRETE SINGLE BOX CULVERT

NOTICE TO CONTRACTOR:

THE EXISTENCE AND LOCATIONS OF ALL UNDERGROUND UTILITIES (UTILITY PIPES, STRUCTURES, ETC.) SHOWN ON THESE PLANS WERE ASCERTAINED BY A REVIEW OF RECORDS PROVIDED BY THESE MEMBER AGENCIES AND ARE APPROXIMATE. NEITHER THE OWNER NOR THE ENGINEER ASSUMES ANY RESPONSIBILITY FOR UTILITIES NOT SHOWN OR NOT IN THE LOCATION SHOWN.

THE CONTRACTOR IS REQUIRED TO TAKE DUE PRECAUTIONARY MEASURES TO PROTECT THE UTILITY LINES SHOWN AND ANY OTHER LINES NOT OF RECORD OR NOT SHOWN ON THESE PLANS. LOCATIONS OF UTILITIES SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF CONSTRUCTION.

CALL UNDERGROUND SERVICE ALERT (U.S.A.) 1-800-227-2600 AT LEAST 2 WORKING DAYS PRIOR TO EXCAVATION.

CITY OF PERRIS

HABIB M. MOTLAGH — DATE 12-14-07

DUPLICATE OF ORIGINAL – DO NOT REVISE

NOTE: PROJECT NO. INDICATED REFERS TO LINE A-1 ONLY

REGISTERED PROFESSIONAL ENGINEER SCOTT R. MELDERMONT NO. C44762 EXP. 3-31-08 CIVIL STATE OF CALIFORNIA

ALBERT A. WEBB ASSOCIATES
3788 McCRAY ST.
RIVERSIDE, CA. 92506
PH. (951) 686-1070
FAX (951) 788-1256

PREPARED BY: [signature] DATE: 12-13-07
R.C.E. NO. C44762 EXP. DATE 3-31-08

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services.
TWO WORKING DAYS BEFORE YOU DIG

PERMANENT BENCH MARK
B.M. NO. S 327-1935
3.9 MI. NW FROM WINCHESTER
3.9 MI. NW ALONG THE ATCHISON,TOPEKA AND SANTA FE RAILWAY FROM THE STATION AT WINCHESTER, RIVERSIDE COUNTY, AT MENIFEE SIDING, 198 YRDS. NW OF THE SE SWITCH STAND. 72 FT. E OF MILEPOST 6, 16.5 FT. NE OF THE CENTERLINE OF THE TRACK, AND 4.5 FT. NE OF THE STATION SIGN. A STANDARD DISK, STAMPED R 327 1935 AND SET IN THE TOP OF A CONCRETE POST.
ELEVATION: 1478.07

REF.	REVISIONS	APPR.	DATE

DESIGNED BY: T.D./J.C.C.
DRAWN BY: T.D.
DATE DRAWN: FEB., 2007
CHECKED BY: J.C.C.

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

RECOMMENDED FOR APPROVAL BY: [signature]
PLANNING ENGINEER
DATE: 12-27-2007

APPROVED BY: [signature]
CHIEF ENGINEER
DATE: 12/21/07

ROMOLAND MDP LATERALS
LINE A-1, LINE A-19
LINE A-20 & LINE A-21
TITLE SHEET

PROJECT NO. 4-0-00430
DRAWING NO. 4-965
SHEET NO. 1 OF 5

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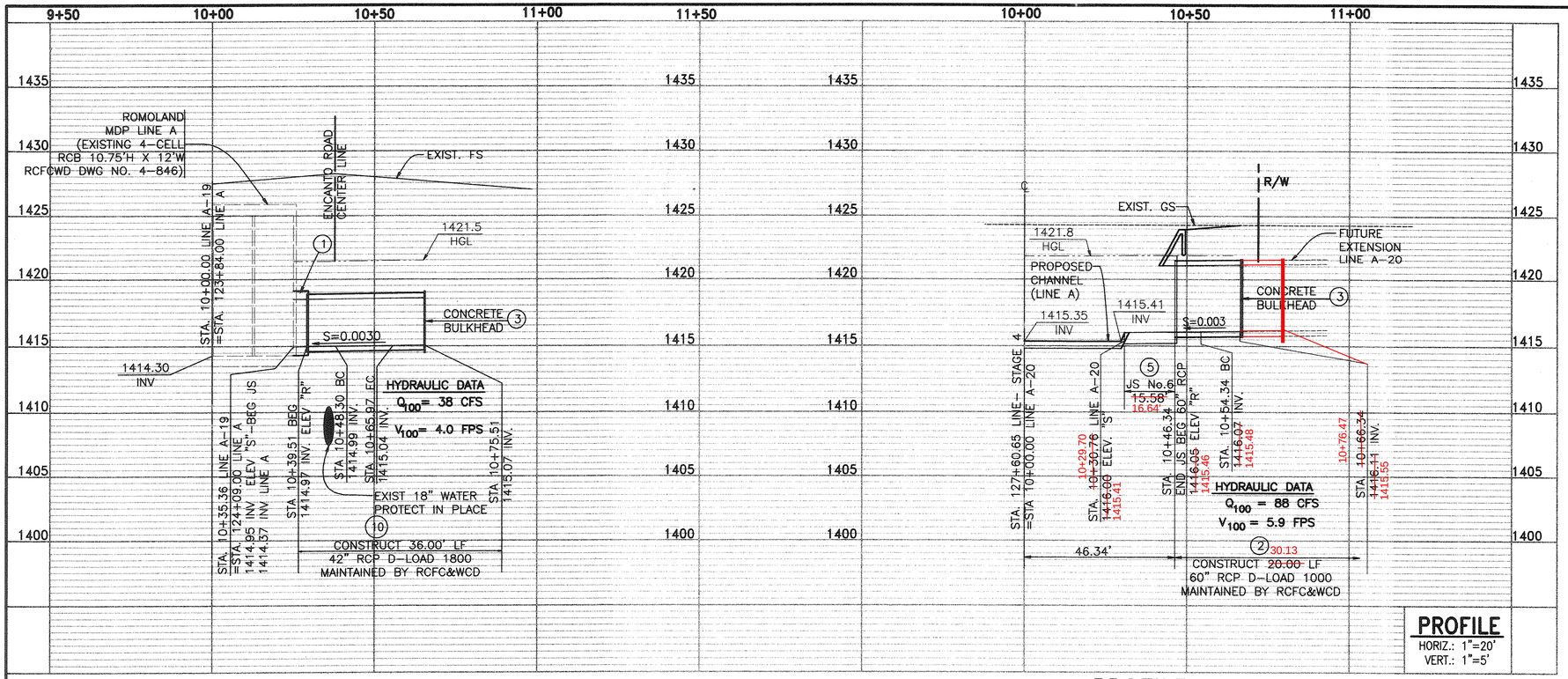
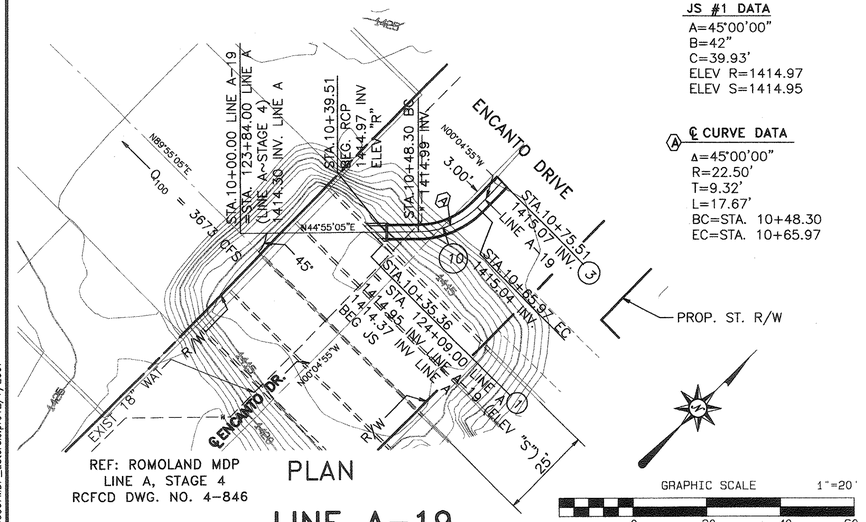


CONSTRUCTION NOTES

1. CONSTRUCT JUNCTION STRUCTURE NO. 1 PER RCFC&WCD. STD. NO. JS226
2. CONSTRUCT 60" RCP (D-LOAD PER PLAN)
3. CONSTRUCT CONCRETE BULKHEAD PER RCFC&WCD. STD DWG M-816
5. CONSTRUCT JUNCTION STRUCTURE NO. 6 PER RCFC&WCD STD. NO. JS231 AND DETAIL HEREON
9. ON MAINTENANCE ROAD REMOVE 3" CLASS II BASE AND REPLACE IN KIND OVER 90% COMPACTED NATIVE
10. CONSTRUCT 42" RCP (D-LOAD PER PLAN)



PLAN

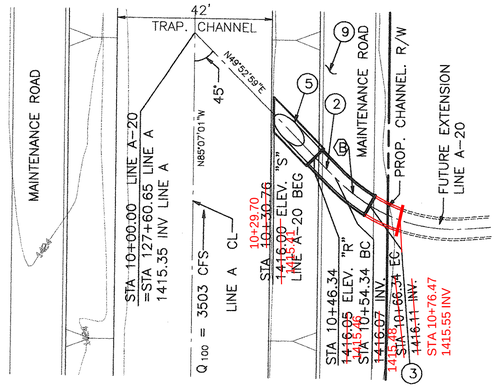
LINE A-19

REF: ROMOLAND MDP LINE A, STAGE 4 RCFCD DWG. NO. 4-846

JS #1 DATA
A=45°00'00"
B=42"
C=39.93'
ELEV R=1414.97
ELEV S=1414.95

℄ CURVE DATA
Δ=45°00'00"
R=22.50'
T=9.32'
L=17.67'
BC=STA. 10+48.30
EC=STA. 10+65.97

SEE ROMOLAND MDP LINE A, STAGE 4 RCFCD DWG. NO. 4-846



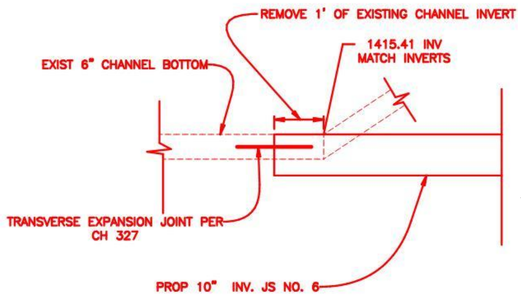
PLAN

LINE A-20

JS #6 DATA
D=60"
L=46.34'
C=30.76'
ELEV R=1416.05
ELEV S=1416.00

℄ CURVE DATA
Δ=15°16'36"
R=45.00'
T=~~6.03'~~ 11.29'
L=~~12.00'~~ 22.13'
BC=STA. 10+54.34
EC=STA. ~~10+66.34~~ 10+76.47

GRAPHIC SCALE 1"=20'
0 20 40 60



MODIFIED JS NO. 6 INVERT CONNECTION DETAIL

CITY OF PERRIS

HABIB M. MOTLAGH — DATE

NOTE: PROJECT NO. INDICATED REFERS TO LINE A-1 ONLY

REGISTERED PROFESSIONAL ENGINEER SCOTT R. HILDEBRANDT NO. C44762 EXP. 3-31-08 CIVIL STATE OF CALIFORNIA

ALBERT A. WEBB ASSOCIATES
3788 McCRAY ST.
RIVERSIDE, CA. 92506
PH. (951) 686-1070

PREPARED BY: — DATE: 12-09

R.C.E. NO. C44762 EXP. DATE 3-31-08

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services.
TWO WORKING DAYS BEFORE YOU DIG

PERMANENT BENCH MARK
B.M. NO. S 327-1935
3.9 MI. NW FROM WINCHESTER
3.9 MI. NW ALONG THE ATCHISON,TOPEKA AND SANTA FE RAILWAY FROM THE STATION AT WINCHESTER, RIVERSIDE COUNTY, AT MENIFEE SIDING, 198 YRDS. NW OF THE SE SWITCH STAND, 72 FT. E OF MILEPOST 6, 16.5 FT. NE OF THE CENTERLINE OF THE TRACK, AND 4.5 FT. NE OF THE STATION SIGN. A STANDARD DISK, STAMPED R 327 1935 AND SET IN THE TOP OF A CONCRETE POST.
ELEVATION: 1478.07

REF.	REVISIONS / DESCRIPTION	APPR.	DATE

DESIGNED BY: T.D.
DRAWN BY: T.D.
DATE DRAWN: FEB. 2007
CHECKED BY: J.C.C.

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL: — DATE: 12/21/07
APPROVED BY: — DATE: 12-21-2007

ROMOLAND MDP LINE A LATERALS
LINE A-19 & LINE A-20

PROJECT NO. 4-0-00430
DRAWING NO. 4-965
SHEET NO. 2 OF 5

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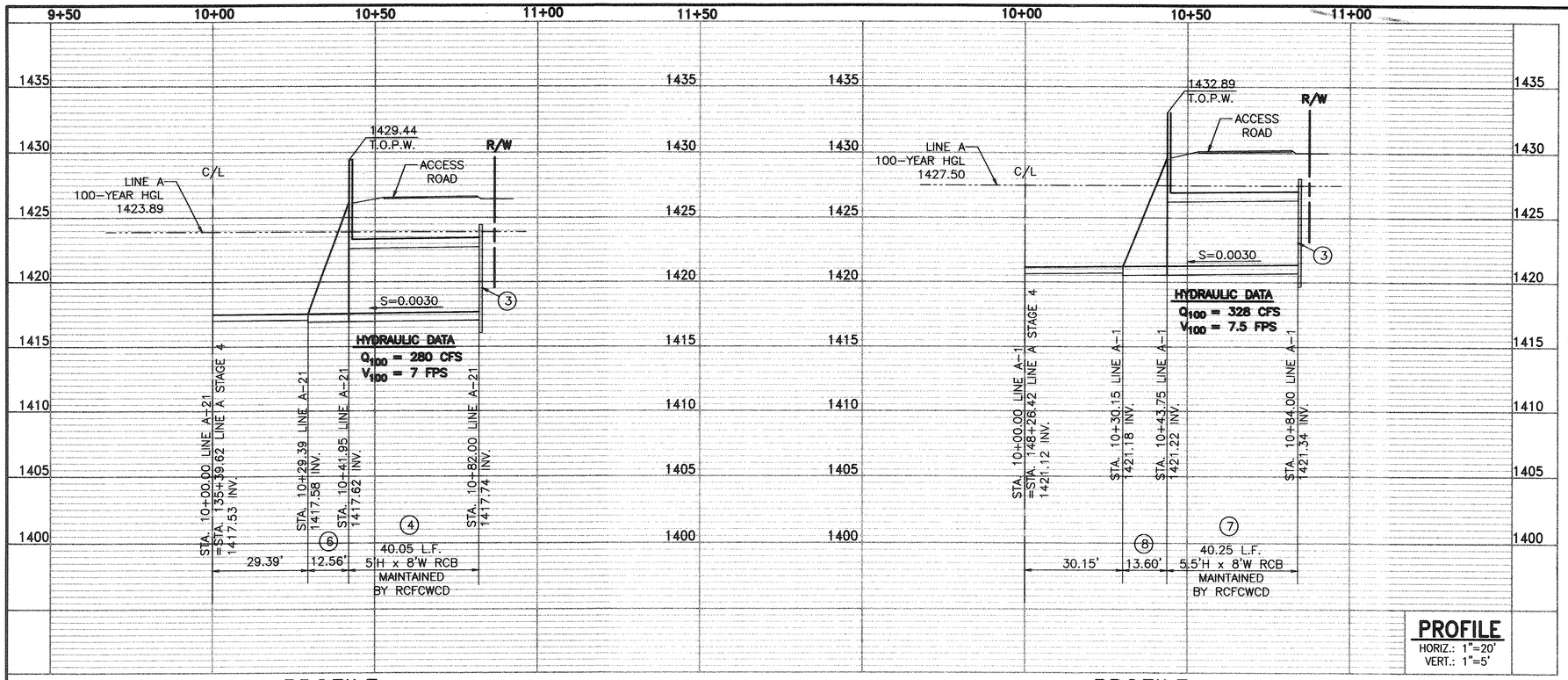
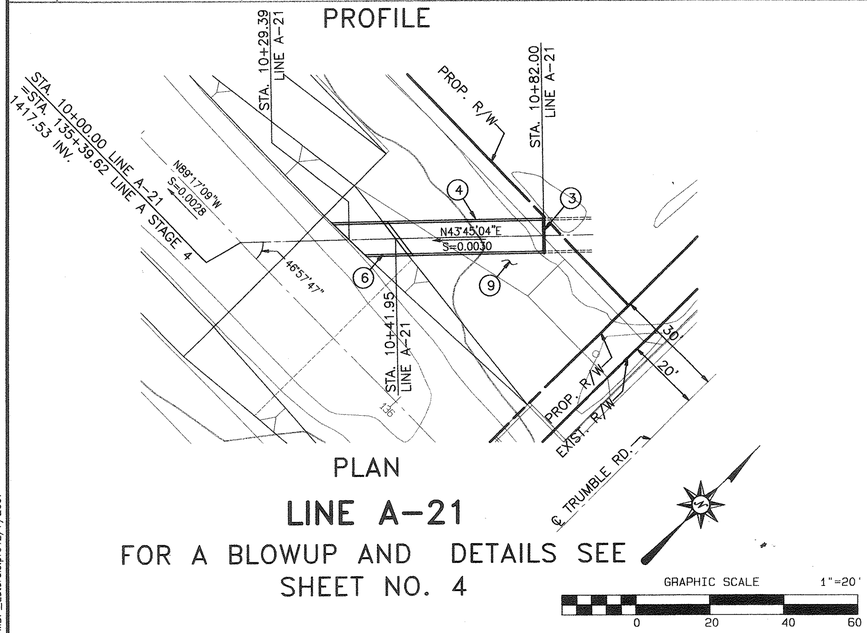


PROFILE
HORIZ.: 1"=20'
VERT.: 1"=5'

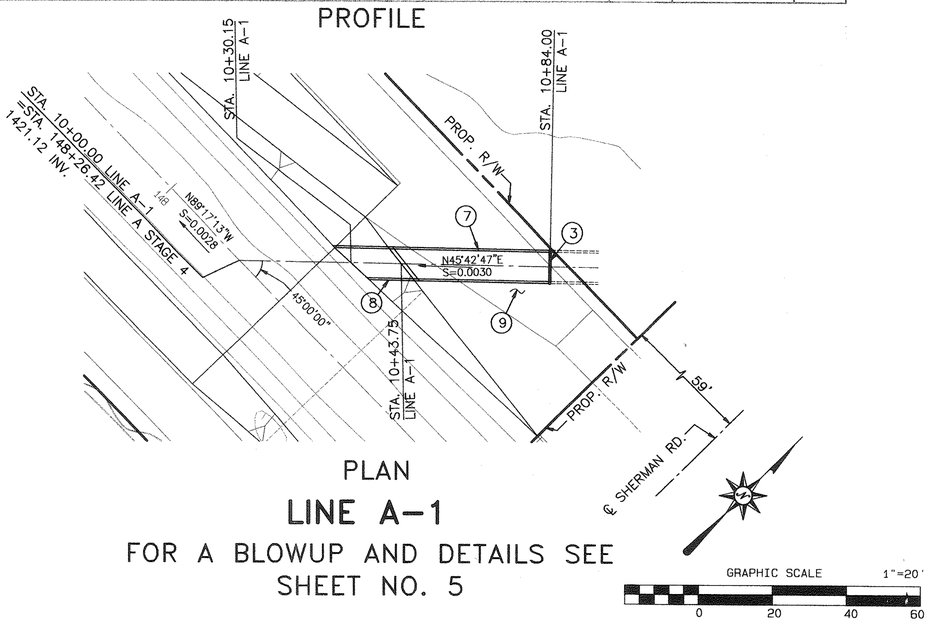
CONSTRUCTION NOTES

3. CONSTRUCT CONCRETE BULK HEAD PER RCFC&WCD. STD DWG M-816
4. CONSTRUCT 5'H x 8'H RCB PER CALTRANS STD. DWG. D-80
6. CONSTRUCT BOX TO CHANNEL JUNCTION STRUCTURE PER DETAIL SEE SHT. 4
7. CONSTRUCT 5.5'H x 8'H RCB PER CALTRANS STD. DWG. D-80
8. CONSTRUCT BOX TO CHANNEL JUNCTION STRUCTURE PER DETAIL SEE SHT. 5
9. ON MAINTENANCE ROAD REMOVE 3" CLASS II BASE AS REQUIRED AND REPLACE IN KIND OVER 90% COMPACTED NATIVE



LINE A-21

FOR A BLOWUP AND DETAILS SEE SHEET NO. 4



LINE A-1

FOR A BLOWUP AND DETAILS SEE SHEET NO. 5

NOTE: PROJECT NO. INDICATED REFERS TO LINE A-1 ONLY

REGISTERED PROFESSIONAL ENGINEER
SCOTT R. WILDERMUTH
NO. C44762
EXP. 3-31-08
CIVIL
STATE OF CALIFORNIA

ALBERT A. WEBB ASSOCIATES
3788 McCRAY ST.
RIVERSIDE, CA. 92506
PH. (951) 686-1070

PREPARED BY: DATE 12-13-07
R.C.E. NO. C44762 EXP. DATE 3-31-08

Don't Dig...Until You Call U.S.A. Toll Free
1-800-227-2600
for the location of buried utility lines.
Don't disrupt vital services.
BURIED CABLE
TWO WORKING DAYS BEFORE YOU DIG

PERMANENT BENCH MARK
B.M. NO. S 327-1935
3.9 MI. NW FROM WINCHESTER
3.9 MI. NW ALONG THE ATCHISON,TOPEKA AND SANTA FE RAILWAY FROM THE STATION AT WINCHESTER, RIVERSIDE COUNTY, AT MENIFEE SIDING, 198 YRDS. NW OF THE SE SWITCH STAND. 72 FT. E OF MILEPOST 6, 16.5 FT. NE OF THE CENTERLINE OF THE TRACK, AND 4.5 FT. NE OF THE STATION SIGN. A STANDARD DISK, STAMPED R 327 1935 AND SET IN THE TOP OF A CONCRETE POST.
ELEVATION: 1478.07

REF.	REVISIONS	APPR.	DATE

DESIGNED BY: J.C.C.
DRAWN BY: R.R.
DATE DRAWN: FEB. 2007
CHECKED BY: J.C.C.

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL BY: APPROVED BY:
DATE: 12/21/07 DATE: 12-21-2007

ROMOLAND MDP LINE A LATERALS
LINE A-21 & LINE A-1

PROJECT NO. 4-0-00430
DRAWING NO. 4-965
SHEET NO. 3 OF 5

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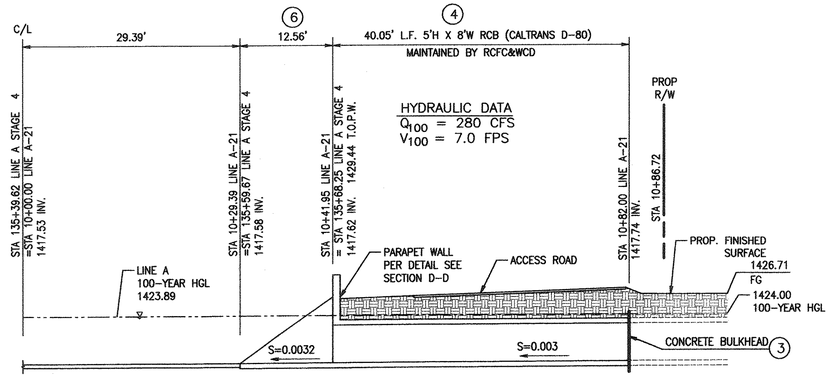
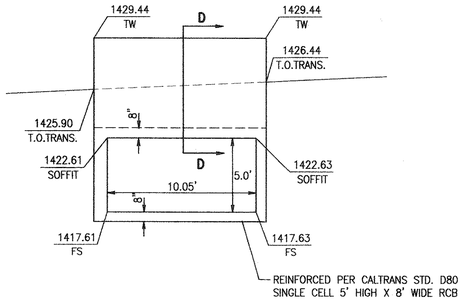
16068



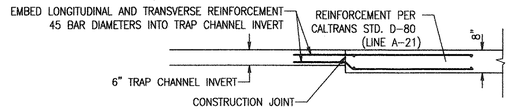
SECTION A-A - PROFILE LINE A-21

SCALE: 1"=10'



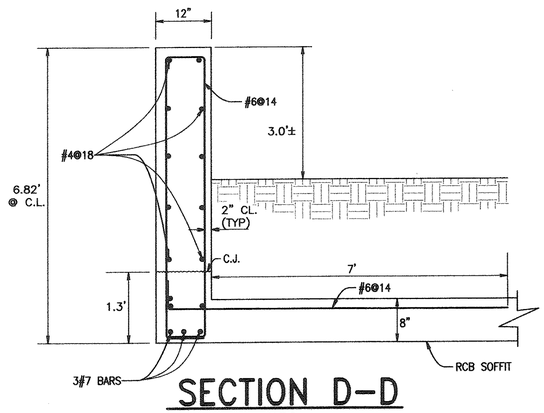
SECTION B-B

SCALE: 1"=5'



SECTION C-C

N.T.S.



SECTION D-D

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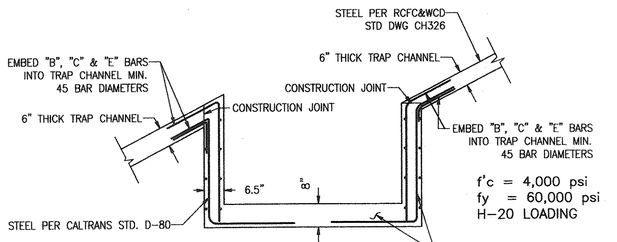
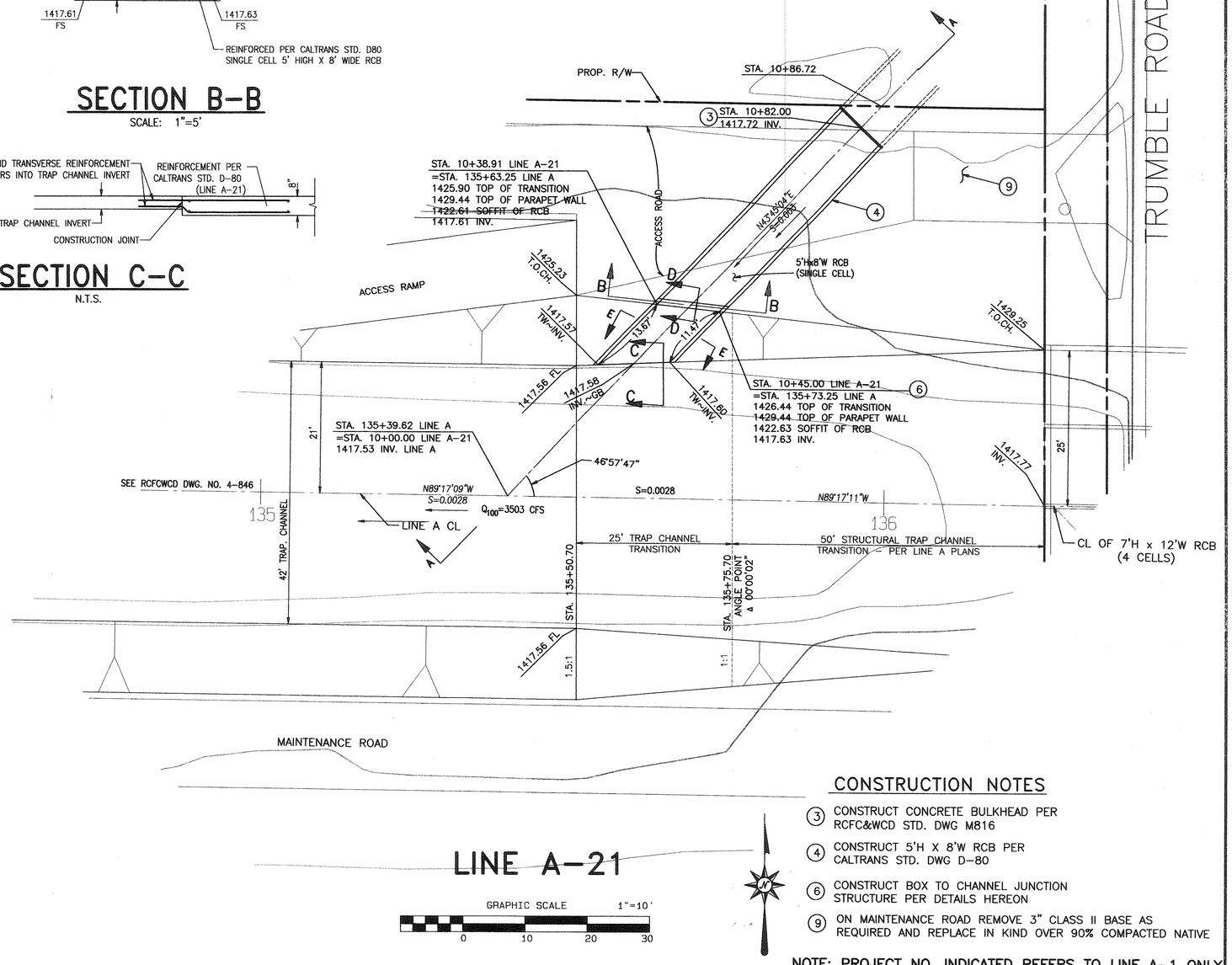


SECTION E-E

N.T.S.



LINE A-21

GRAPHIC SCALE 1"=10'

0 10 20 30

CONSTRUCTION NOTES

3. CONSTRUCT CONCRETE BULKHEAD PER RCFC&WCD STD. DWG M816
4. CONSTRUCT 5'H X 8'W RCB PER CALTRANS STD. DWG D-80
6. CONSTRUCT BOX TO CHANNEL JUNCTION STRUCTURE PER DETAILS HEREON
9. ON MAINTENANCE ROAD REMOVE 3" CLASS II BASE AS REQUIRED AND REPLACE IN KIND OVER 90% COMPACTED NATIVE

NOTE: PROJECT NO. INDICATED REFERS TO LINE A-1 ONLY

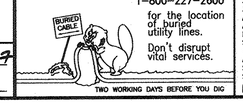
REGISTERED PROFESSIONAL ENGINEER SCOTT R. HILDEBRANDT NO. C44762 EXP. 3-31-08 CIVIL STATE OF CALIFORNIA

ALBERT A. WEBB ASSOCIATES
3788 McCRAY ST.
RIVERSIDE, CA. 92506
PH. (951) 686-1070

PREPARED BY: [signature] DATE: 12/3/07

R.C.E. NO. C44762 EXP. DATE 3-31-08

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services.



PERMANENT BENCH MARK
B.M. NO. S 327-1935
3.9 MI. NW FROM WINCHESTER
3.9 MI. NW ALONG THE ATCHISON,TOPEKA AND SANTA FE RAILWAY FROM THE STATION AT WINCHESTER, RIVERSIDE COUNTY, AT MENIFEE SIDING, 198 YRDS. NW OF THE SE SWITCH STAND. 72 FT. E OF MILEPOST 6, 16.5 FT. NE OF THE CENTERLINE OF THE TRACK, AND 4.5 FT. NE OF THE STATION SIGN. A STANDARD DISK, STAMPED R 327 1935 AND SET IN THE TOP OF A CONCRETE POST.
ELEVATION: 1478.07

REF.	REVISIONS	APPR.	DATE

DESIGNED BY: J.C.C.
DRAWN BY: M.W.
DATE DRAWN: FEB. 2007
CHECKED BY: J.C.C.

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

RECOMMENDED FOR APPROVAL: [signature] DATE: 12/21/07

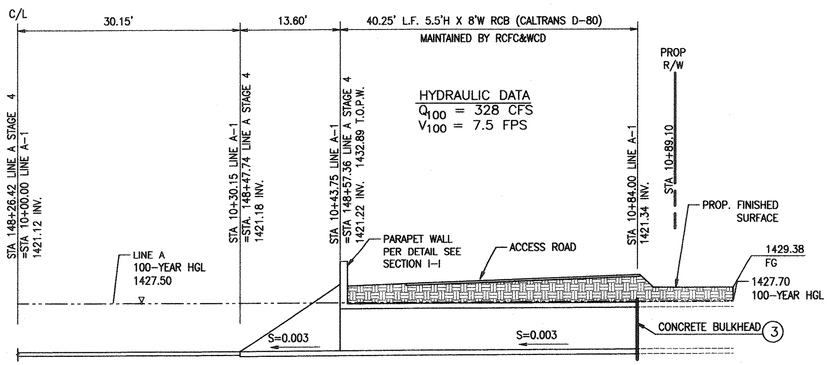
APPROVED BY: [signature] DATE: 12-21-2007

ROMOLAND MDP LINE A-21 DETAIL SHEET

PROJECT NO. 4-0-00430
DRAWING NO. 4-965
SHEET NO. 4 OF 5

G:\2006\06-0067\DWG&PROS\06067MDP_Laterals.pro12/7/2007

16068



SECTION F-F – PROFILE LINE A-1

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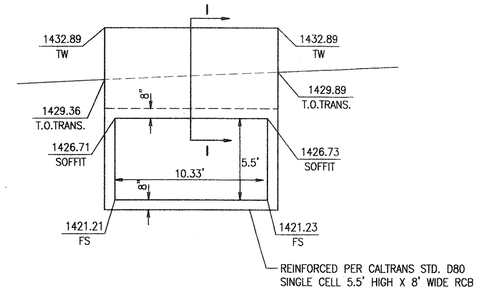
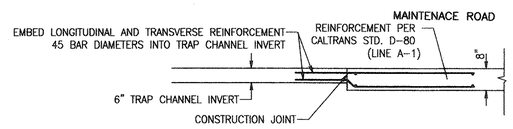


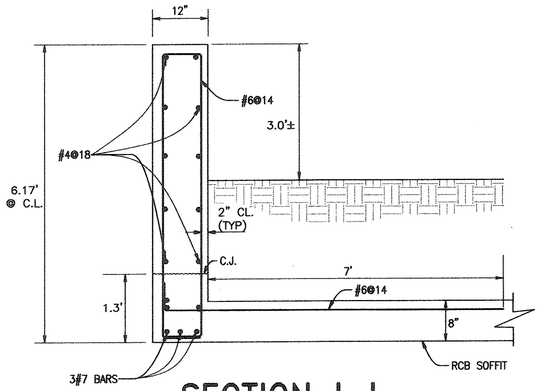
SECTION G-G

SCALE: 1"=5'



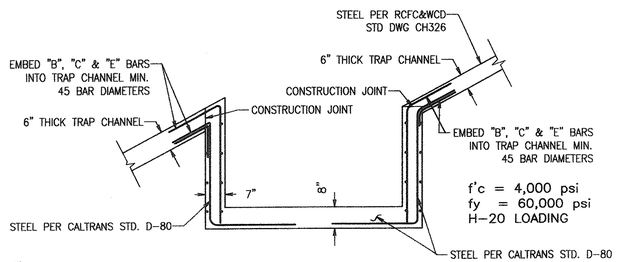
SECTION H-H

N.T.S.



SECTION I-I

N.T.S.



SECTION J-J

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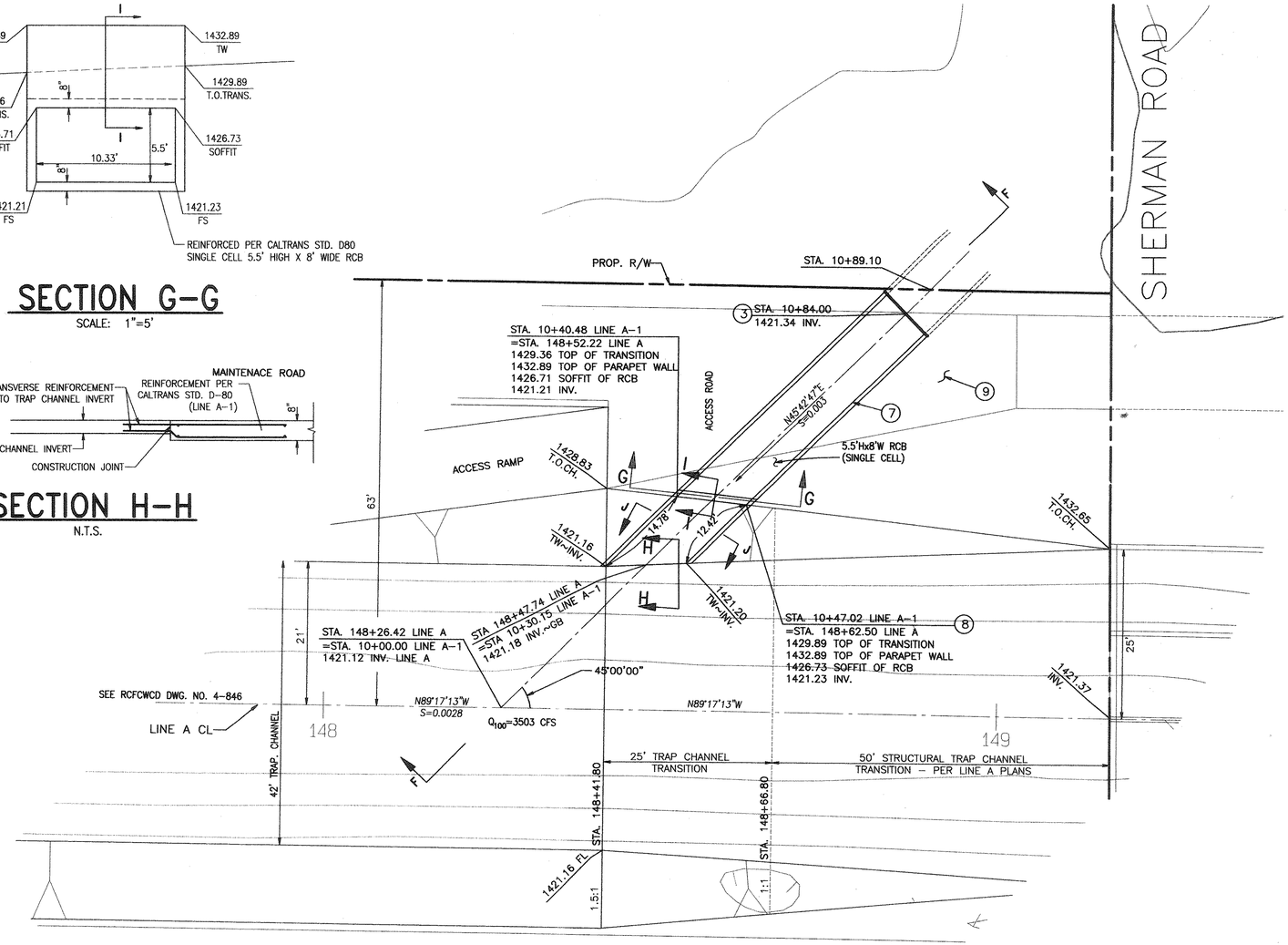

LINE A-1

GRAPHIC SCALE 1"=10'

0 10 20 30

CONSTRUCTION NOTES

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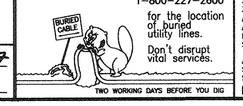

TWO WORKING DAYS BEFORE YOU DIG

PERMANENT BENCH MARK
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RECOMMENDED FOR APPROVAL: DATE: 12/21/07
APPROVED BY: DATE: 12-21-2007

ROMOLAND MDP LINE A-1
DETAIL SHEET

PROJECT NO. 4-0-00430
DRAWING NO. 4-965
SHEET NO. 5 OF 5

16068

APPENDIX 9.9.2

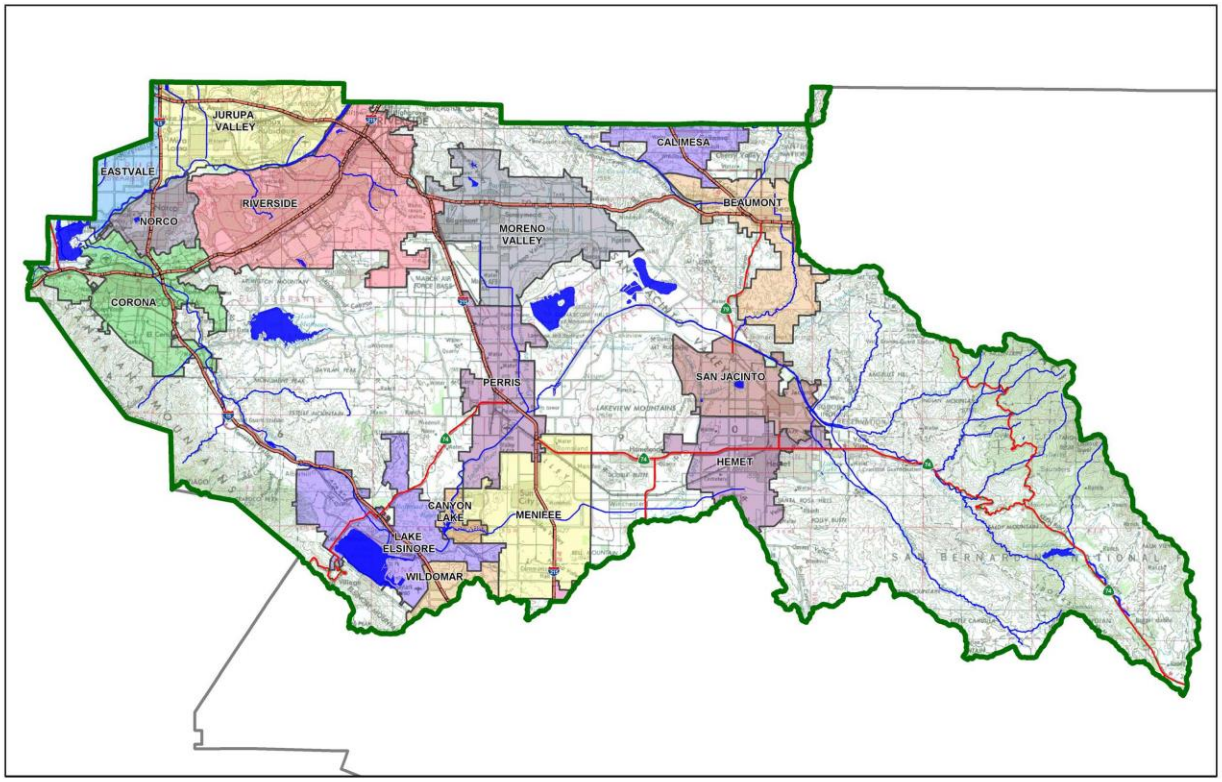
PROJECT SPECIFIC WATER QUALITY MANAGEMENT PLAN

Project Specific Water Quality Management Plan

*A Template for Projects located within the **Santa Ana Watershed** Region of Riverside County*

Project Title: Menifee Commerce Center

Development No: PP2019-005



☒ **Preliminary**
☐ **Final**

Original Date Prepared: Dec 2018

Revision Date(s): August 2021, May 2021

Prepared for Compliance with
Regional Board Order No. **R8-2010-0033**
Template revised June 30, 2016

Contact Information:

Prepared for:
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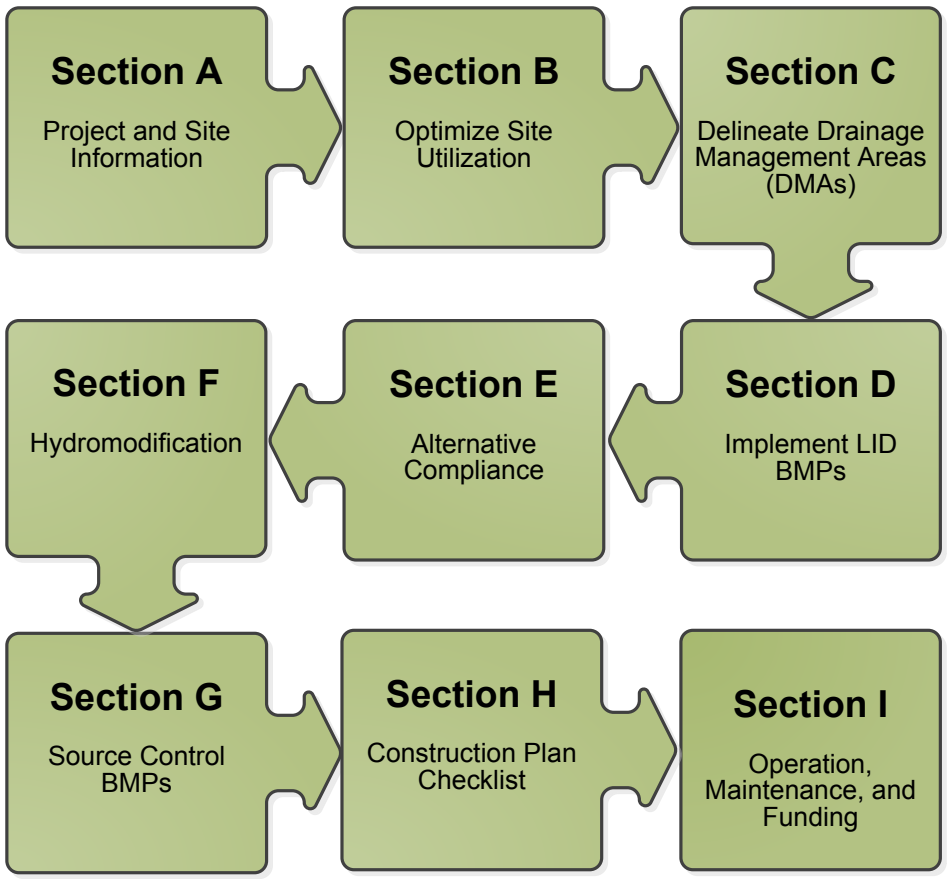
Prepared by:
Albert A. Webb Associates
Attn: Scott Hildebrandt
3788 McCray Street
Riverside, CA 92506
(951) 686-1070

A Brief Introduction

This Project-Specific WQMP Template for the **Santa Ana Region** has been prepared to help guide you in documenting compliance for your project. Because this document has been designed to specifically document compliance, you will need to utilize the WQMP Guidance Document as your "how-to" manual to help guide you through this process. Both the Template and Guidance Document go hand-in-hand, and will help facilitate a well prepared Project-Specific WQMP. Below is a flowchart for the layout of this Template that will provide the steps required to document compliance.



OWNER'S CERTIFICATION

This Project-Specific Water Quality Management Plan (WQMP) has been prepared for Core 5 Industrial Partners by Albert A. Webb Associates for the Menifee Commerce Center project.

This WQMP is intended to comply with the requirements of City of Menifee for (Municipal Code Section 15.01) which includes the requirement for the preparation and implementation of a Project-Specific WQMP.

The undersigned, while owning the property/project described in the preceding paragraph, shall be responsible for the implementation and funding of this WQMP and will ensure that this WQMP is amended as appropriate to reflect up-to-date conditions on the site. In addition, the property owner accepts responsibility for interim operation and maintenance of Stormwater BMPs until such time as this responsibility is formally transferred to a subsequent owner. This WQMP will be reviewed with the facility operator, facility supervisors, employees, tenants, maintenance and service contractors, or any other party (or parties) having responsibility for implementing portions of this WQMP. At least one copy of this WQMP will be maintained at the project site or project office in perpetuity. The undersigned is authorized to certify and to approve implementation of this WQMP. The undersigned is aware that implementation of this WQMP is enforceable under the City of Menifee Water Quality Ordinance (Municipal Code Section 15.01).

"I, the undersigned, certify under penalty of law that the provisions of this WQMP have been reviewed and accepted and that the WQMP will be transferred to future successors in interest."

Owner's Signature	Date
Owner's Printed Name	Owner's Title/Position

PREPARER'S CERTIFICATION

"The selection, sizing and design of stormwater treatment and other stormwater quality and quantity control measures in this plan meet the requirements of Regional Water Quality Control Board Order No. **R8-2010-0033** and any subsequent amendments thereto."

Preparer's Signature	Date
Preparer's Printed Name	Preparer's Title/Position

Preparer's Licensure:

Table of Contents

List of Tables

List of Appendices

Section A: Project and Site Information

PROJECT INFORMATION		
Type of Project:	Commercial/Industrial	
Planning Area:	Winchester Area Plan	
Community Name:	Menifee North Specific Plan	
Development Name:	Menifee Commerce Center	
PROJECT LOCATION		
Latitude & Longitude (DMS): 33.738114°, 117.180406°		
Project Watershed and Sub-Watershed: Santa Ana, San Jacinto		
Gross Acres: 80.7		
APN(s): Insert text here		
Map Book and Page No.: Insert text here		
PROJECT CHARACTERISTICS		
Proposed or Potential Land Use(s)	Commercial/Industrial	
Proposed or Potential SIC Code(s)	**1541** (General Contractors-Industrial Building)	
	4225 (General Warehousing & Storage)	
Area of Impervious Project Footprint (SF)	3,513,600	
Total Area of proposed Impervious Surfaces within the Project Footprint (SF)/or Replacement	3,150,500	
Does the project consist of offsite road improvements?	☒ Y	☐ N
Does the project propose to construct unpaved roads?	☐ Y	☒ N
Is the project part of a larger common plan of development (phased project)?	☐ Y	☒ N
EXISTING SITE CHARACTERISTICS		
Total area of existing Impervious Surfaces within the Project limits Footprint (SF)	0	
Is the project located within any MSHCP Criteria Cell?	☐ Y	☒ N
If so, identify the Cell number:	N/A	
Are there any natural hydrologic features on the project site?	☐ Y	☒ N
Is a Geotechnical Report attached?	☒ Y	☐ N
If no Geotech. Report, list the NRCS soils type(s) present on the site (A, B, C and/or D)	N/A	
What is the Water Quality Design Storm Depth for the project?	0.61	

A.1 Project Description

The project is proposing two warehouse facilities (approximately 1,491,450 total square feet) on approximately 81 acres of vacant land. Building-1 is 1,105,450 square feet on approximately 51.8 acres; Building-2 is 386,000 square feet on approximately 20.2 acres.

For the Building-1 site, the existing elevations across the site vary from 1437 at the easterly property line to 1431 at the westerly property line (NAVD88 datum). It is bound by Sherman Road to the west and Dawson Road to the east. The site currently slopes down at approximately 0.5% grade to the west. The existing drainage pattern for the site and the general area is characterized by sheet flows that follow the slope to the west.

For the Building-2 site, the existing elevations across the site vary from 1432 at the easterly property line to 1428 at the westerly property line (NAVD88 datum). It is bound by Trumble Road to the west and Sherman Road to the east. The site currently slopes down at approximately 0.3% grade to the west. The

existing drainage pattern for the site and the general area is characterized by sheet flows that follow the slope to the west.

The existing runoff from both sites continue to flow east until it is intercepted by a cutoff channel adjacent to the Interstate-215 off-ramp to Ethanac Road. Flow will ultimately reach and discharge into Romoland Line-A which drains into the San Jacinto River before finally reaching Canyon Lake and Lake Elsinore.

The project sites are impacted by offsite flows since Sherman Road and Dawson Road are not currently built and do not intercept offsite run-on. There is also a channel that discharges flow at the northeast corner of the Building-1 site. Three offsite storm drains are proposed; one each in Trumble Road, Sherman Road, and Dawson Road. The storm drains will capture offsite runoff and convey it to the Line-A channel. The proposed project sites will also construct Sherman Road and Dawson Road, and they will widen Trumble Road to ultimate width.

Onsite flows generated by the proposed projects will surface flow through the site utilizing ribbon gutters. Minimal subsurface storm drain will be used to convey flow into each site's proposed detention basin. Onsite trash enclosures will be designed per City of Menifee standards 1301.11-1301.14.

The Building-1 site is DMA-A. Runoff will be conveyed to the west towards the detention basin, Basin-1. Runoff will enter the basin directly and by the manhole splitter structure. The manhole splitter will convey all low-flow tributary runoff to Basin-1 via an elevated weir structure. A lift station will pump the low flows into a Bioscape modular wetland (BMP-A) before entering Line A-1 in Sherman Road. All high flows will overtop the weir structure and gravity flow to Line A-1.

The Building-2 site is DMA-B. Runoff will be conveyed to the west towards the detention basin, Basin-2. Runoff will enter the basin directly and by the manhole splitter structure. The manhole splitter will convey all low-flow tributary runoff to Basin-2 via an elevated weir structure. A lift station will pump the low flows into a Bioscape modular wetland (BMP-B) before entering Line A-21 in Trumble Road. All high flows will overtop the weir structure and gravity flow to Line A-21.

Proposed offsite street improvements, DMA-C, will be treated by curb opening modular wetlands. Tributary water quality flows for street half-widths vary from 0.05 cfs to 0.2 cfs. The street catch basins will be online drainage facilities and will have internal bypass structures for high flow runoff events.

The last half-mile reach of Line-A connecting to the San Jacinto River is not built out to ultimate. This makes the two project sites in an HCOC nonexempt area. To mitigate the increase in runoff and not adversely affect the downstream facilities, the 2-year, 24-hour storm will be routed to match existing flowrates for both sites. The flows will be routed by storing the sites' volumes in the basins and pumping at a rate to meet drawdown requirements. All high flows will by-pass the basin via a splitter manhole and gravity flow from the sites.

A.2 Maps and Site Plans

When completing your Project-Specific WQMP, include a map of the local vicinity and existing site. In addition, include all grading, drainage, landscape/plant palette and other pertinent construction plans in Appendix 2. At a **minimum**, your WQMP Site Plan should include the following:

- Drainage Management Areas
- Proposed Structural BMPs
- Drainage Path
- Drainage Infrastructure, Inlets, Overflows
- Source Control BMPs
- Buildings, Roof Lines, Downspouts
- Impervious Surfaces
- Standard Labeling
- BMP Locations (Lat/Long)

Use your discretion on whether or not you may need to create multiple sheets or can appropriately accommodate these features on one or two sheets. Keep in mind that the Co-Permittee plan reviewer must be able to easily analyze your project utilizing this template and its associated site plans and maps.

A.3 Identify Receiving Waters

Using Table A.1 below, list in order of upstream to downstream, the receiving waters that the project site is tributary to. Continue to fill each row with the Receiving Water's 303(d) listed impairments (if any), designated beneficial uses, and proximity, if any, to a RARE beneficial use. Include a map of the receiving waters in Appendix 1.

Table A.1 Identification of Receiving Waters

Receiving Waters	EPA Approved 303(d) List Impairments	Designated Beneficial Uses	Proximity to RARE Beneficial Use
San Jacinto River (Reach 3) (HU#802.11)	NONE	AGR, GWR, WILD, MUN, REC1, REC2, WARM	NOT A WATER BODY CLASSIFIED AS RARE
Canyon Lake (HU#802.11, 802.12)	NUTRIENTS, PATHOGENS	AGR, GWR, WILD, MUN, REC1, REC2, WARM	NOT A WATER BODY CLASSIFIED AS RARE
San Jacinto River (Reach 1) (HU#802.11, 802.32, 802.31)	NONE	AGR, GWR, WILD, MUN, REC1, REC2, WARM	NOT A WATER BODY CLASSIFIED AS RARE
Lake Elsinore (HU#802.31)	DDT, NUTRIENTS, LOW DO, PCBs, TOXICITY	MUN, REC1, REC2, WARM, WILD	NOT A WATER BODY CLASSIFIED AS RARE

A.4 Additional Permits/Approvals required for the Project:

Table A.2 Other Applicable Permits

Agency	Permit Required	
State Department of Fish and Game, 1602 Streambed Alteration Agreement	☐ Y	☒ N
State Water Resources Control Board, Clean Water Act (CWA) Section 401 Water Quality Cert.	☐ Y	☒ N
US Army Corps of Engineers, CWA Section 404 Permit	☐ Y	☒ N
US Fish and Wildlife, Endangered Species Act Section 7 Biological Opinion	☐ Y	☒ N
Statewide Construction General Permit Coverage	☒ Y	☐ N
Statewide Industrial General Permit Coverage **(Dependent on Tenant)**	☒ Y	☐ N

Western Riverside MSHCP Consistency Approval (e.g., JPR, DBESP)	☐ Y	☒ N
Other *(please list in the space below as required)* Grading Permit	☒ Y	☐ N

If yes is answered to any of the questions above, the Co-Permittee may require proof of approval/coverage from those agencies as applicable including documentation of any associated requirements that may affect this Project-Specific WQMP.

Section B: Optimize Site Utilization (LID Principles)

Review of the information collected in Section 'A' will aid in identifying the principal constraints on site design and selection of LID BMPs as well as opportunities to reduce imperviousness and incorporate LID Principles into the site and landscape design. For example, **constraints** might include impermeable soils, high groundwater, groundwater pollution or contaminated soils, steep slopes, geotechnical instability, high-intensity land use, heavy pedestrian or vehicular traffic, utility locations or safety concerns. **Opportunities** might include existing natural areas, low areas, oddly configured or otherwise unbuildable parcels, easements and landscape amenities including open space and buffers (which can double as locations for bioretention BMPs), and differences in elevation (which can provide hydraulic head). Prepare a brief narrative for each of the site optimization strategies described below. This narrative will help you as you proceed with your LID design and explain your design decisions to others.

The 2010 Santa Ana MS4 Permit further requires that LID Retention BMPs (Infiltration Only or Harvest and Use) be used unless it can be shown that those BMPs are infeasible. Therefore, it is important that your narrative identify and justify if there are any constraints that would prevent the use of those categories of LID BMPs. Similarly, you should also note opportunities that exist which will be utilized during project design. Upon completion of identifying Constraints and Opportunities, include these on your WQMP Site plan in Appendix 1.

Consideration of "highest and best use" of the discharge should also be considered. For example, Lake Elsinore is evaporating faster than runoff from natural precipitation can recharge it. Requiring infiltration of 85% of runoff events for projects tributary to Lake Elsinore would only exacerbate current water quality problems associated with Pollutant concentration due to lake water evaporation. In cases where rainfall events have low potential to recharge Lake Elsinore (i.e. no hydraulic connection between groundwater to Lake Elsinore, or other factors), requiring infiltration of Urban Runoff from projects is counterproductive to the overall watershed goals. Project proponents, in these cases, would be allowed to discharge Urban Runoff, provided they used equally effective filtration-based BMPs.

Site Optimization

The following questions are based upon Section 3.2 of the WQMP Guidance Document. Review of the WQMP Guidance Document will help you determine how best to optimize your site and subsequently identify opportunities and/or constraints, and document compliance.

Did you identify and preserve existing drainage patterns? If so, how? If not, why?

The project proposes to preserve the existing drainage pattern to the southwest.

Did you identify and protect existing vegetation? If so, how? If not, why?

The site is vacant with minimal vegetal scrub. There are no dense areas of vegetation nor well-established trees.

Did you identify and preserve natural infiltration capacity? If so, how? If not, why?

Per the attached geotechnical and infiltration report, regional infiltration is not feasible. However, self-retaining areas exist that will retain small amounts of rainfall in the topsoil.

Did you identify and minimize impervious area? If so, how? If not, why?

The site contains the standard impervious area per code for the given land use.

Did you identify and disperse runoff to adjacent pervious areas? If so, how? If not, why?

All water quality runoff will be directed to the proposed detention basins and modular wetlands.

Section C: Delineate Drainage Management Areas (DMAs)

Utilizing the procedure in Section 3.3 of the WQMP Guidance Document which discusses the methods of delineating and mapping your project site into individual DMAs, complete Table C.1 below to appropriately categorize the types of classification (e.g., Type A, Type B, etc.) per DMA for your project site. Upon completion of this table, this information will then be used to populate and tabulate the corresponding tables for their respective DMA classifications.

Table C.1 DMA Classifications

	DMA Name or ID	Surface Type(s)[1][2]	Area (Sq. Ft.)	DMA Type
DMA-A	L-A	LANDSCAPE	120,840	D
	SR-A	LANDSCAPE	61,000	B
	R-A	ROOF	1,105,450	D
	H-A	HARDSCAPE	892,820	D
	BMP-A	LANDSCAPE	900	D
	SELF TREATING-A	LANDSCAPE	76,740	A
DMA-B	L-B	LANDSCAPE	59,770	D
	SR-B	LANDSCAPE	40,070	B
	R-B	ROOF	386,000	D
	H-B	HARDSCAPE	392,410	D
	BMP-B	LANDSCAPE	300	D
	SELF TREATING-B	LANDSCAPE	6,500	A
DMA-C	C-D-1	HARDSCAPE	27,160	D
	C-D-2	HARDSCAPE	72,240	D
	C-D-3	HARDSCAPE	22,850	D
	C-S-1	HARDSCAPE	85,330	D
	C-S-2	HARDSCAPE	106,860	D
	C-T	HARDSCAPE	59,400	D

[1]*Reference Table 2-1 in the WQMP Guidance Document to populate this column*
[2]*If multi-surface provide back-up*

Table C.2 Type 'A', Self-Treating Areas

DMA Name or ID	Area (Sq. Ft.)	Stabilization Type	Irrigation Type (if any)
SELF TREATING-A	76,740	LANDSCAPE	DRIP
SELF TREATING-B	6,500	LANDSCAPE	DRIP

Table C.3 Type 'B', Self-Retaining Areas

Self-Retaining Area				**Type 'C' DMAs that are draining to the Self-Retaining Area**		
DMA Name/ ID	Post-project surface type	Area (square feet) [A]	Storm Depth (inches) [B]	DMA Name / ID	[C] from Table C.4 = [C]	Required Retention Depth (inches) [D]
SR-A	LANDSCAPE	61,000	0.61			0.61
SR-B	LANDSCAPE	40,070	0.61			0.61

$$[D] = [B] + \frac{[B] \cdot [C]}{[A]}$$

Table C.4 Type 'C', Areas that Drain to Self-Retaining Areas

DMA					**Receiving Self-Retaining DMA**		
DMA Name/ ID	Area (square feet) [A]	Post-project surface type	Impervious fraction [B]	Product [C] = [A] x [B]	DMA name /ID	Area (square feet) [D]	Ratio [C]/[D]

Table C.5 Type 'D', Areas Draining to BMPs

DMA Name or ID	BMP Name or ID
L-A	BMP-A
R-A	
H-A	
BMP-A	
L-B	BMP-B
R-B	
H-B	
BMP-B	
C-D-1	C-D-1
C-D-2	C-D-2
C-D-3	C-D-3
C-S-1	C-S-1
C-S-2	C-S-2
C-T	C-T

Note: More than one drainage management area can drain to a single LID BMP, however, one drainage management area may not drain to more than one BMP.

Section D: Implement LID BMPs

D.1 Infiltration Applicability

Is there an approved downstream 'Highest and Best Use' for stormwater runoff (see discussion in Chapter 2.4.4 of the WQMP Guidance Document for further details)? ☐ Y ☒ N

If yes has been checked, Infiltration BMPs shall not be used for the site; proceed to section D.3

If no, continue working through this section to implement your LID BMPs. It is recommended that you contact your Co-Permittee to verify whether or not your project discharges to an approved downstream 'Highest and Best Use' feature.

Geotechnical Report

A Geotechnical Report or Phase I Environmental Site Assessment may be required by the Copermittee to confirm present and past site characteristics that may affect the use of Infiltration BMPs. In addition, the Co-Permittee, at their discretion, may not require a geotechnical report for small projects as described in Chapter 2 of the WQMP Guidance Document. If a geotechnical report has been prepared, include it in Appendix 3. In addition, if a Phase I Environmental Site Assessment has been prepared, include it in Appendix 4.

Is this project classified as a small project consistent with the requirements of Chapter 2 of the WQMP Guidance Document? ☐ Y ☒ N

Infiltration Feasibility

Table D.1 below is meant to provide a simple means of assessing which DMAs on your site support Infiltration BMPs and is discussed in the WQMP Guidance Document in Chapter 2.4.5. Check the appropriate box for each question and then list affected DMAs as applicable. If additional space is needed, add a row below the corresponding answer.

Table D.1 Infiltration Feasibility

Does the project site…	YES	NO
…have any DMAs with a seasonal high groundwater mark shallower than 10 feet?		X
If Yes, list affected DMAs:		
…have any DMAs located within 100 feet of a water supply well?		X
If Yes, list affected DMAs:		
…have any areas identified by the geotechnical report as posing a public safety risk where infiltration of stormwater could have a negative impact?		X
If Yes, list affected DMAs:		
…have measured in-situ infiltration rates of less than 1.6 inches / hour?	X	
If Yes, list affected DMAs: **DMA-A, DMA-B**		
…have significant cut and/or fill conditions that would preclude in-situ testing of infiltration rates at the final infiltration surface?		X
If Yes, list affected DMAs:		
…geotechnical report identify other site-specific factors that would preclude effective and safe infiltration?		X
Describe here:		

If you answered "Yes" to any of the questions above for any DMA, Infiltration BMPs should not be used for those DMAs and you should proceed to the assessment for Harvest and Use below.

D.2 Harvest and Use Assessment

Please check what applies*:*

☒ Reclaimed water will be used for the non-potable water demands for the project.

☐Downstream water rights may be impacted by Harvest and Use as approved by the Regional Board (verify with the Copermittee).

☐The Design Capture Volume will be addressed using Infiltration Only BMPs. In such a case, Harvest and Use BMPs are still encouraged, but it would not be required if the Design Capture Volume will be infiltrated or evapotranspired.

If any of the above boxes have been checked, Harvest and Use BMPs need not be assessed for the site. If none of the above criteria applies, follow the steps below to assess the feasibility of irrigation use, toilet use and other non-potable uses (e.g., industrial use).

Irrigation Use Feasibility

Complete the following steps to determine the feasibility of harvesting stormwater runoff for Irrigation Use BMPs on your site:

Step 1: Identify the total area of irrigated landscape on the site, and the type of landscaping used.

Total Area of Irrigated Landscape: Insert Area (Acres)

Type of Landscaping (Conservation Design or Active Turf): List Landscaping Type

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for irrigation use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: Insert Area (Acres)

Step 3: Cross reference the Design Storm depth for the project site (see Exhibit A of the WQMP Guidance Document) with the left column of Table 2-3 in Chapter 2 to determine the minimum area of Effective Irrigated Area per Tributary Impervious Area (EIATIA).

Enter your EIATIA factor: EIATIA Factor

Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum irrigated area that would be required.

Minimum required irrigated area: Insert Area (Acres)

Step 5: Determine if harvesting stormwater runoff for irrigation use is feasible for the project by comparing the total area of irrigated landscape (Step 1) to the minimum required irrigated area (Step 4).

Minimum required irrigated area (Step 4)	Available Irrigated Landscape (Step 1)
Insert Area (Acres)	Insert Area (Acres)

Toilet Use Feasibility

Complete the following steps to determine the feasibility of harvesting stormwater runoff for toilet flushing uses on your site:

Step 1: Identify the projected total number of daily toilet users during the wet season, and account for any periodic shut downs or other lapses in occupancy:

Projected Number of Daily Toilet Users: Number of daily Toilet Users

Project Type: Enter 'Residential', 'Commercial', 'Industrial' or 'Schools'

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for toilet use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: Insert Area (Acres)

Step 3: Enter the Design Storm depth for the project site (see Exhibit A) into the left column of Table 2-2 in Chapter 2 to determine the minimum number or toilet users per tributary impervious acre (TUTIA).

Enter your TUTIA factor: TUTIA Factor

Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum number of toilet users that would be required.

Minimum number of toilet users: Required number of toilet users

Step 5: Determine if harvesting stormwater runoff for toilet flushing use is feasible for the project by comparing the Number of Daily Toilet Users (Step 1) to the minimum required number of toilet users (Step 4).

Minimum required Toilet Users (Step 4)	**Projected number of toilet users (Step 1)**
Insert Area (Acres)	Insert Area (Acres)

Other Non-Potable Use Feasibility

Are there other non-potable uses for stormwater runoff on the site (e.g. industrial use)? See Chapter 2 of the Guidance for further information. If yes, describe below. If no, write N/A.

Insert narrative description here.

Step 1: Identify the projected average daily non-potable demand, in gallons per day, during the wet season and accounting for any periodic shut downs or other lapses in occupancy or operation.

Average Daily Demand: Projected Average Daily Use (gpd)

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for the identified non-potable use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: Insert Area (Acres)

Step 3: Enter the Design Storm depth for the project site (see Exhibit A) into the left column of Table 2-4 in Chapter 2 to determine the minimum demand for non-potable uses per tributary impervious acre.

Enter the factor from Table 2-4: Enter Value

Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum number of gallons per day of non-potable use that would be required.

Minimum required use: Minimum use required (gpd)

Step 5: Determine if harvesting stormwater runoff for other non-potable use is feasible for the project by comparing the projected average daily use (Step 1) to the minimum required non-potable use (Step 4).

Minimum required non-potable use (Step 4)	**Projected average daily use (Step 1)**
Minimum use required (gpd)	Projected Average Daily Use (gpd)

If Irrigation, Toilet and Other Use feasibility anticipated demands are less than the applicable minimum values, Harvest and Use BMPs are not required and you should proceed to utilize LID Bioretention and Biotreatment per Section 3.4.2 of the WQMP Guidance Document.

D.3 Bioretention and Biotreatment Assessment

Other LID Bioretention and Biotreatment BMPs as described in Chapter 2.4.7 of the WQMP Guidance Document are feasible on nearly all development sites with sufficient advance planning.

Select one of the following:

☒ LID Bioretention/Biotreatment BMPs will be used for some or all DMAs of the project as noted below in Section D.4 (note the requirements of Section 3.4.2 in the WQMP Guidance Document).

☐ A site-specific analysis demonstrating the technical infeasibility of all LID BMPs has been performed and is included in Appendix 5. If you plan to submit an analysis demonstrating the technical infeasibility of LID BMPs, request a pre-submittal meeting with the Copermittee to discuss this option. Proceed to Section E to document your alternative compliance measures.

D.4 Feasibility Assessment Summaries

From the Infiltration, Harvest and Use, Bioretention and Biotreatment Sections above, complete Table D.2 below to summarize which LID BMPs are technically feasible, and which are not, based upon the established hierarchy.

Table D.2 LID Prioritization Summary Matrix

DMA Name/ID	LID BMP Hierarchy				No LID (Alternative Compliance)
	1. Infiltration	2. Harvest and use	3. Bioretention	4. Biotreatment	
DMA-A	☐	☐	☐	☒	☐
DMA-B	☐	☐	☐	☒	☐
DMA-C	☐	☐	☐	☒	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐

For those DMAs where LID BMPs are not feasible, provide a brief narrative below summarizing why they are not feasible, include your technical infeasibility criteria in Appendix 5, and proceed to Section E below to document Alternative Compliance measures for those DMAs. Recall that each proposed DMA must pass through the LID BMP hierarchy before alternative compliance measures may be considered.

Insert narrative description here.

D.5 LID BMP Sizing

Each LID BMP must be designed to ensure that the Design Capture Volume will be addressed by the selected BMPs. First**,** calculate the Design Capture Volume for each LID BMP using the V_{BMP} worksheet in Appendix F of the LID BMP Design Handbook. Second**,** design the LID BMP to meet the required V_{BMP} using a method approved by the Copermittee. Utilize the worksheets found in the LID BMP Design Handbook or consult with your Copermittee to assist you in correctly sizing your LID BMPs. Complete Table D.3 below to document the Design Capture Volume and the Proposed Volume for each LID BMP. Provide the completed design procedure sheets for each LID BMP in Appendix 6. You may add additional rows to the table below as needed.

Table D.3 DCV Calculations for DMA-A LID BMPs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Enter BMP Name / Identifier Here*		
	[A]		[B]	[C]	[A] x [C]			
L-A	*112,500*	*LANDSCAPE*	*0.1*	*0.11*	*12,426.5*	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
R-A	*1,154,200*	*ROOFS*	*1*	*0.89*	*1,029,546.4*			
H-A	*864,700*	*HARDSCAPE*	*1*	*0.89*	*771,312.4*			
BMP-A	*900*	*LANDSCAPE*	*0.1*	*0.11*	*99.4*			
SELF TREATING-A	*105,500*							
SR-A	*54,500*							
	2,540,100				2,034,422.3	0.61	103,416.5	***103,420***

[B], [C] is obtained as described in Section 2.3.1 of the WQMP Guidance Document

[E] is obtained from Exhibit A in the WQMP Guidance Document

[G] is obtained from a design procedure sheet, such as in LID BMP Design Handbook and placed in Appendix 6

Table D.4 DCV Calculations for DMA-B LID BMPs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Enter BMP Name / Identifier Here*		
	[A]		[B]	[C]	[A] x [C]			
L-A	*61,800*	*LANDSCAPE*	*0.1*	*0.11*	*6,826.3*	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
R-A	*386,000*	*ROOFS*	*1*	*0.89*	*344,312.0*			
H-A	*393,200*	*HARDSCAPE*	*1*	*0.89*	*350,734.4*			
BMP-A	*300*	*LANDSCAPE*	*0.1*	*0.11*	*33.1*			
SELF TREATING-B	*19,000*							
SR-B	*32,500*							
	973,500					0.61	39,339.4	***39,340***

Section E: Alternative Compliance (LID Waiver Program)

LID BMPs are expected to be feasible on virtually all projects. Where LID BMPs have been demonstrated to be infeasible as documented in Section D, other Treatment Control BMPs must be used (subject to LID waiver approval by the Copermittee). Check one of the following Boxes:

☒ LID Principles and LID BMPs have been incorporated into the site design to fully address all Drainage Management Areas. No alternative compliance measures are required for this project and thus this Section is not required to be completed.

- *Or* -

☐ The following Drainage Management Areas are unable to be addressed using LID BMPs. A site-specific analysis demonstrating technical infeasibility of LID BMPs has been approved by the Co-Permittee and included in Appendix 5. Additionally, no downstream regional and/or sub-regional LID BMPs exist or are available for use by the project. The following alternative compliance measures on the following pages are being implemented to ensure that any pollutant loads expected to be discharged by not incorporating LID BMPs, are fully mitigated.

E.1 Identify Pollutants of Concern

Utilizing Table A.1 from Section A above which noted your project's receiving waters and their associated EPA approved 303(d) listed impairments, cross reference this information with that of your selected Priority Development Project Category in Table E.1 below. If the identified General Pollutant Categories are the same as those listed for your receiving waters, then these will be your Pollutants of Concern and the appropriate box or boxes will be checked on the last row. The purpose of this is to document compliance and to help you appropriately plan for mitigating your Pollutants of Concern in lieu of implementing LID BMPs.

Table E.1 Potential Pollutants by Land Use Type

Priority Development Project Categories and/or Project Features (check those that apply)	General Pollutant Categories							
	Bacterial Indicators	Metals	Nutrients	Pesticides	Toxic Organic Compounds	Sediments	Trash & Debris	Oil & Grease
☐ Detached Residential Development	P	N	P	P	N	P	P	P
☐ Attached Residential Development	P	N	P	P	N	P	P	P(2)
☒ Commercial/Industrial Development	P(3)	P	P(1)	P(1)	P(5)	P(1)	P	P
☐ Automotive Repair Shops	N	P	N	N	P(4, 5)	N	P	P
☐ Restaurants (>5,000 ft^2)	P	N	N	N	N	N	P	P
☐ Hillside Development (>5,000 ft^2)	P	N	P	P	N	P	P	P
☒ Parking Lots (>5,000 ft^2)	P(6)	P	P(1)	P(1)	P(4)	P(1)	P	P
☐ Retail Gasoline Outlets	N	P	N	N	P	N	P	P
Project Priority Pollutant(s) of Concern	☒	☐	☒	☒	☒	☐	☐	☐

P = Potential

N = Not Potential

(1) A potential Pollutant if non-native landscaping exists or is proposed onsite; otherwise not expected

(2) A potential Pollutant if the project includes uncovered parking areas; otherwise not expected

(3) A potential Pollutant is land use involving animal waste

(4) Specifically petroleum hydrocarbons

(5) Specifically solvents

(6) Bacterial indicators are routinely detected in pavement runoff

E.2 Stormwater Credits

Projects that cannot implement LID BMPs but nevertheless implement smart growth principles are potentially eligible for Stormwater Credits. Utilize Table 3-8 within the WQMP Guidance Document to identify your Project Category and its associated Water Quality Credit. If not applicable, write N/A.

Table E.2 Water Quality Credits

Qualifying Project Categories	Credit Percentage[2]
N/A	
Total Credit Percentage[1]	

[1]Cannot Exceed 50%

[2]Obtain corresponding data from Table 3-8 in the WQMP Guidance Document

E.3 Sizing Criteria

After you appropriately considered Stormwater Credits for your project, utilize Table E.3 below to appropriately size them to the DCV, or Design Flow Rate, as applicable. Please reference Chapter 3.5.2 of the WQMP Guidance Document for further information.

Table E.3 Treatment Control BMP Sizing

DMA Type/ID	**DMA Area (square feet)**	**Post-Project Surface Type**	**Effective Impervious Fraction, I_f**	**DMA Runoff Factor**	**DMA Area x Runoff Factor**		***Enter BMP Name / Identifier Here***		
	[A]		[B]	[C]	[A] x [C]				
N/A						*Design Storm Depth (in)*	*Minimum Design Capture Volume or Design Flow Rate (cubic feet or cfs)*	*Total Storm Water Credit % Reduction*	*Proposed Volume or Flow on Plans (cubic feet or cfs)*
	A_T = Σ[A]				Σ= [D]	[E]	$[F] = \frac{[D]x[E]}{[G]}$	[F] X (1-[H])	[I]

[B], [C] is obtained as described in Section 2.3.1 from the WQMP Guidance Document

[E] is for Flow-Based Treatment Control BMPs [E] = .2, for Volume-Based Control Treatment BMPs, [E] obtained from Exhibit A in the WQMP Guidance Document

[G] is for Flow-Based Treatment Control BMPs [G] = 43,560, for Volume-Based Control Treatment BMPs, [G] = 12

[H] is from the Total Credit Percentage as Calculated from Table E.2 above

[I] as obtained from a design procedure sheet from the BMP manufacturer and should be included in Appendix 6

E.4 Treatment Control BMP Selection

Treatment Control BMPs typically provide proprietary treatment mechanisms to treat potential pollutants in runoff, but do not sustain significant biological processes. Treatment Control BMPs must have a removal efficiency of a medium or high effectiveness as quantified below:

- **High**: equal to or greater than 80% removal efficiency
- **Medium**: between 40% and 80% removal efficiency

Such removal efficiency documentation (e.g., studies, reports, etc.) as further discussed in Chapter 3.5.2 of the WQMP Guidance Document, must be included in Appendix 6. In addition, ensure that proposed Treatment Control BMPs are properly identified on the WQMP Site Plan in Appendix 1.

Table E.4 Treatment Control BMP Selection

Selected Treatment Control BMP Name or ID[1]	Priority Pollutant(s) of Concern to Mitigate[2]	Removal Efficiency Percentage[3]
N/A		

[1] Treatment Control BMPs must not be constructed within Receiving Waters. In addition, a proposed Treatment Control BMP may be listed more than once if they possess more than one qualifying pollutant removal efficiency.

[2] Cross Reference Table E.1 above to populate this column.

[3] As documented in a Co-Permittee Approved Study and provided in Appendix 6.

Section F: Hydromodification

F.1 Hydrologic Conditions of Concern (HCOC) Analysis

Once you have determined that the LID design is adequate to address water quality requirements, you will need to assess if the proposed LID Design may still create a HCOC. Review Chapters 2 and 3 (including Figure 3-7) of the WQMP Guidance Document to determine if your project must mitigate for Hydromodification impacts. If your project meets one of the following criteria which will be indicated by the check boxes below, you do not need to address Hydromodification at this time. However, if the project does not qualify for Exemptions 1, 2 or 3, then additional measures must be added to the design to comply with HCOC criteria. This is discussed in further detail below in Section F.2.

HCOC EXEMPTION 1: The Priority Development Project disturbs less than one acre. The Copermittee has the discretion to require a Project-Specific WQMP to address HCOCs on projects less than one acre on a case by case basis. The disturbed area calculation should include all disturbances associated with larger common plans of development.

Does the project qualify for this HCOC Exemption? ☐ Y ☒ N

If Yes, HCOC criteria do not apply.

HCOC EXEMPTION 2: The volume and time of concentration[1] of storm water runoff for the post-development condition is not significantly different from the pre-development condition for a 2-year return frequency storm (a difference of 5% or less is considered insignificant) using one of the following methods to calculate:

- Riverside County Hydrology Manual
- Technical Release 55 (TR-55): Urban Hydrology for Small Watersheds (NRCS 1986), or derivatives thereof, such as the Santa Barbara Urban Hydrograph Method
- Other methods acceptable to the Co-Permittee

Does the project qualify for this HCOC Exemption? ☐ Y ☒ N

If Yes, report results in Table F.1 below and provide your substantiated hydrologic analysis in Appendix 7.

Table F.1 Hydrologic Conditions of Concern Summary

	2 year – 24 hour		
	Pre-condition	**Post-condition**	**% Difference**
Time of Concentration	**N/A**		
Volume (Cubic Feet)			

[1] Time of concentration is defined as the time after the beginning of the rainfall when all portions of the drainage basin are contributing to flow at the outlet.

HCOC EXEMPTION 3: All downstream conveyance channels to an adequate sump (for example, Prado Dam, Lake Elsinore, Canyon Lake, Santa Ana River, or other lake, reservoir or naturally erosion resistant feature) that will receive runoff from the project are engineered and regularly maintained to ensure design flow capacity; no sensitive stream habitat areas will be adversely affected; or are not identified on the Co-Permittees Hydromodification Susceptibility Maps.

Does the project qualify for this HCOC Exemption? ☐ Y ☒ N

If Yes, HCOC criteria do not apply and note below which adequate sump applies to this HCOC qualifier:

F.2 HCOC Mitigation

If none of the above HCOC Exemption Criteria are applicable, HCOC criteria is considered mitigated if they meet one of the following conditions:

a. Additional LID BMPS are implemented onsite or offsite to mitigate potential erosion or habitat impacts as a result of HCOCs. This can be conducted by an evaluation of site-specific conditions utilizing accepted professional methodologies published by entities such as the California Stormwater Quality Association (CASQA), the Southern California Coastal Water Research Project (SCCRWP), or other Co-Permittee approved methodologies for site-specific HCOC analysis.

b. The project is developed consistent with an approved Watershed Action Plan that addresses HCOC in Receiving Waters.

c. Mimicking the pre-development hydrograph with the post-development hydrograph, for a 2-year return frequency storm. Generally, the hydrologic conditions of concern are not significant, if the post-development hydrograph is no more than 10% greater than pre-development hydrograph. In cases where excess volume cannot be infiltrated or captured and reused, discharge from the site must be limited to a flow rate no greater than 110% of the pre-development 2-year peak flow.

Be sure to include all pertinent documentation used in your analysis of the items a, b or c in Appendix 7.

The 2-year, 24-hour storm has been routed down to existing flowrates. See appendix 7 for applicable calculations.

Section G: Source Control BMPs

Source control BMPs include permanent, structural features that may be required in your project plans — such as roofs over and berms around trash and recycling areas — and Operational BMPs, such as regular sweeping and "housekeeping", that must be implemented by the site's occupant or user. The MEP standard typically requires both types of BMPs. In general, Operational BMPs cannot be substituted for a feasible and effective permanent BMP. Using the Pollutant Sources/Source Control Checklist in Appendix 8, review the following procedure to specify Source Control BMPs for your site:

1. ***Identify Pollutant Sources*:** Review Column 1 in the Pollutant Sources/Source Control Checklist. Check off the potential sources of Pollutants that apply to your site.

2. ***Note Locations on Project-Specific WQMP Exhibit*:** Note the corresponding requirements listed in Column 2 of the Pollutant Sources/Source Control Checklist. Show the location of each Pollutant source and each permanent Source Control BMP in your Project-Specific WQMP Exhibit located in Appendix 1.

3. ***Prepare a Table and Narrative*:** Check off the corresponding requirements listed in Column 3 in the Pollutant Sources/Source Control Checklist. In the left column of Table G.1 below, list each potential source of runoff Pollutants on your site (from those that you checked in the Pollutant Sources/Source Control Checklist). In the middle column, list the corresponding permanent, Structural Source Control BMPs (from Columns 2 and 3 of the Pollutant Sources/Source Control Checklist) used to prevent Pollutants from entering runoff. **Add additional narrative** in this column that explains any special features, materials or methods of construction that will be used to implement these permanent, Structural Source Control BMPs.

4. ***Identify Operational Source Control BMPs:*** To complete your table, refer once again to the Pollutant Sources/Source Control Checklist. List in the right column of your table the Operational BMPs that should be implemented as long as the anticipated activities continue at the site. Copermittee stormwater ordinances require that applicable Source Control BMPs be implemented; the same BMPs may also be required as a condition of a use permit or other revocable Discretionary Approval for use of the site.

Table G.1 Permanent and Operational Source Control Measures

Potential Sources of Runoff pollutants	Permanent Structural Source Control BMPs	Operational Source Control BMPs
A. On-site storm drain inlets	*Mark all inlets with the works "Only Rain Down the Storm Drain" or similar. Catch Basin Markers may be available from the Riverside County Flood Control and Water Conservation District, call 951-955-1200 to verify.*	*Maintain and periodically repaint or replace inlet markings as needed; at least every 5 years. Inspect annually every summer.* *Provide stormwater pollution prevention information to new site owners, lessees, or operators.* *See applicable operational BMPs in Fact Sheet SC-44, "Drainage System Maintenance," in Appendix 10 (CASQA Stormwater Quality Handbook at*

	On-site drainage structures, including all storm drain clean outs, area drains, inlets, catch basins, inlet & outlet structures, lift stations, forebays, & water treatment control basins shall be inspected and maintained on a regular basis to ensure their operational adequacy. Inspect and maintain before each rainy season and after the first heavy rain.	*www.cabmphandbooks.com* *Include the following in lessee agreements: "Tenants shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains"* *Maintenance should include removal of trash, debris, & sediment and the repair of any deficiencies or damage that may impact water quality. Maintain at least once in September prior to the rainy season and after storm as needed.*
B. Interior floor drains and elevator shaft sump	*The interior floor drains and elevator shaft sump pumps will be plumbed to sanitary sewer*	*Inspect and maintain drains at least once annually to prevent blockages and overflow.*
C. Landscape/Outdoor Pesticide Use	*The final landscape shall be designed to accomplish all of the following:* *Preserve existing native trees, shrubs and ground cover to the maximum extent possible.* *Design landscape to minimize irrigation and runoff, to promote surface infiltration where appropriate and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution.* *Where landscaped areas are used to retain or detain stormwater, specify plants that are tolerant of saturated soil conditions.* *Consider using pest-resistant plants, especially adjacent to hardscape.* *To insure successful establishments, select plants appropriate to site, soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency and plant interactions.* *Pesticide usage should be at a necessary minimum and be consistent with the instructions*	*Maintain landscaping using minimum or no pesticides.* *See applicable operational BMPs in "What you should know for…. Landscape and Gardening" at http://rcflood.org/stormwater and Appendix 10.* *Provide IPM information to new owners, lessees and operators.* *Landscape maintenance should include mowing, weeding, trimming, removal of trash & debris, repair of erosion, re-vegetation, and removal of cut & dead vegetation. It should be completed before rainy season and as needed.* *Irrigation maintenance should include the repair of leaky or broken sprinkler heads, the maintaining of timing apparatus accuracy, and the maintaining of shut off valves in good working order.*

	contained on product labels and with the regulations administered by the State Department of Pesticide *Regulation. Pesticides should be used at an absolute minimum or not at all in the retention/infiltration basin. If used, it should not be applied in close proximity to the rainy season.*	
D. Refuse Trash Storage areas	*Trash container storage areas shall be paved with an impervious surface, designed not to allow run-on from adjoining areas, designed to divert drainage from adjoining roofs and pavements from the surrounding area, and screened or walled to prevent off-site transport of trash.* *Trash dumpsters (containers) shall be leak proof and have attached covers or lids.* *Trash enclosures shall be roofed per City standards and the details on the FWQMP Exhibit in Appendix 1.* *Trash compactors shall be roofed and set on a concrete pad per City standards. The pad shall be a minimum of one foot larger all around than the trash compactor and sloped to drain to a sanitary sewer line. Connection of trash area drains to the MS4 is prohibited.* *See CASQA SD-32 BMP Fact Sheets in Appendix 10 for additional information.* *Signs shall be posted on or near dumpsters with the words "Do not dump hazardous materials here" or similar.*	*Adequate number of receptacles shall be provided. Inspect receptacles monthly; repair or replace leaky receptacles as needed. Keep receptacles covered.* *Prohibit/prevent dumping of liquid or hazardous wastes. Post "no hazardous materials" signs. Inspect and pick up litter daily and clean up spills immediately. Keep spill control materials available on-site. See Fact Sheet SC-34, in Appendix 10, "Waste Handling and Disposal" in the CASQA Stormwater Quality Handbook* *at www.cabmphandbooks.com*
E. Loading Docks	*Loading docks will not be covered and are 4 feet above finished pavement surface.* *Spill kits are to be kept on-site at all times per SC-11*	*Move loaded and unloaded items indoors as soon as possible.* *Inspect for accumulated trash and debris. Implement good housekeeping procedures on a regular basis. Sweep areas clean instead of using wash water.* *Loading docks will be kept in a clean and orderly condition, through a regular program of sweeping and litter control, and immediate clean up of any spills or broken containers.*

		Property owner will ensure that loading docks will be swept as needed. Cleanup procedures will not include the use of wash-down water. Property owner will be responsible for implementation of loading dock housekeeping procedures *See the Fact Sheet SC-30, in Appendix 10, "Outdoor Loading and Unloading" in the CASQA Stormwater Quality Handbooks a* *www.cabmphandbooks.com*
F. Fire Sprinkler Test Water	*Provide a means to drain fire sprinkler test water to the sanitary sewer.*	*See the note in the Fact Sheet SC-41, in Appendix 10, "Building and Grounds Maintenance", in the CASQA Stormwater Quality Handbooks at* *www.cabmphandbooks.com*
G. Miscellaneous Drain or Wash Water or Other Sources *Boiler drain lines* *Condensate drain lines* *Rooftop equipment* *Drainage sumps* *Roofing, gutters and trim* *Other sources*	*Boiler drain lines shall be directly or indirectly connected to the sanitary sewer system and may not discharge to the storm drain system* *Condensate drain lines may discharge to landscaped areas if the flow is small enough that runoff will not occur.* *Condensate drain lines may not discharge to the storm drain system.* *Rooftop equipment with potential to produce pollutants shall be roofed and/or have secondary containment.* *Any drainage sumps on-site shall feature a sediment sump to reduce the quantity of sediment in pumped water.* *Avoid roofing, gutters and trim made of copper of other unprotected metals that may leach into runoff.* *Include controls for other sources as specified by local reviewer.*	
H. Plazas, sidewalks, and parking lots	*Spill kits are to be kept on-site at all times per SC-11*	*Sweep plazas, sidewalks, and parking lots regularly and before the rainy season to prevent accumulation of litter and debris. Collect debris from pressure washing to prevent entry into the storm drain system. Collect*

		washwater containing any cleaning agent or degreaser and discharge to the sanitary sewer not to a storm drain.

Section H: Construction Plan Checklist

Populate Table H.1 below to assist the plan checker in an expeditious review of your project. The first two columns will contain information that was prepared in previous steps, while the last column will be populated with the corresponding plan sheets. This table is to be completed with the submittal of your final Project-Specific WQMP.

Table H.1 Construction Plan Cross-reference

BMP No. or ID	BMP Identifier and Description	Corresponding Plan Sheet(s)	BMP Location (Lat/Long)
*	*	*	*

Note that the updated table — or Construction Plan WQMP Checklist — is **only a reference tool** to facilitate an easy comparison of the construction plans to your Project-Specific WQMP. Co-Permittee staff can advise you regarding the process required to propose changes to the approved Project-Specific WQMP.

*To be included in final WQMP

Section I: Operation, Maintenance and Funding

The Copermittee will periodically verify that Stormwater BMPs on your site are maintained and continue to operate as designed. To make this possible, your Copermittee will require that you include in Appendix 9 of this Project-Specific WQMP:

1. A means to finance and implement facility maintenance in perpetuity, including replacement cost.
2. Acceptance of responsibility for maintenance from the time the BMPs are constructed until responsibility for operation and maintenance is legally transferred. A warranty covering a period following construction may also be required.
3. An outline of general maintenance requirements for the Stormwater BMPs you have selected.
4. Figures delineating and designating pervious and impervious areas, location, and type of Stormwater BMP, and tables of pervious and impervious areas served by each facility. Geo-locating the BMPs using a coordinate system of latitude and longitude is recommended to help facilitate a future statewide database system.
5. A separate list and location of self-retaining areas or areas addressed by LID Principles that do not require specialized O&M or inspections but will require typical landscape maintenance as noted in Chapter 5, pages 85-86, in the WQMP Guidance. Include a brief description of typical landscape maintenance for these areas.

Your local Co-Permittee will also require that you prepare and submit a detailed Stormwater BMP Operation and Maintenance Plan that sets forth a maintenance schedule for each of the Stormwater BMPs built on your site. An agreement assigning responsibility for maintenance and providing for inspections and certification may also be required.

Details of these requirements and instructions for preparing a Stormwater BMP Operation and Maintenance Plan are in Chapter 5 of the WQMP Guidance Document.

Maintenance Mechanism: WQMP Covenant and Agreement

Will the proposed BMPs be maintained by a Home Owners' Association (HOA) or Property Owners Association (POA)?

☐ Y ☒ N

Include your Operation and Maintenance Plan and Maintenance Mechanism in Appendix 9. Additionally, include all pertinent forms of educational materials for those personnel that will be maintaining the proposed BMPs within this Project-Specific WQMP in Appendix 10.

Appendix 1: Maps and Site Plans

Location Map, WQMP Site Plan and Receiving Waters Map

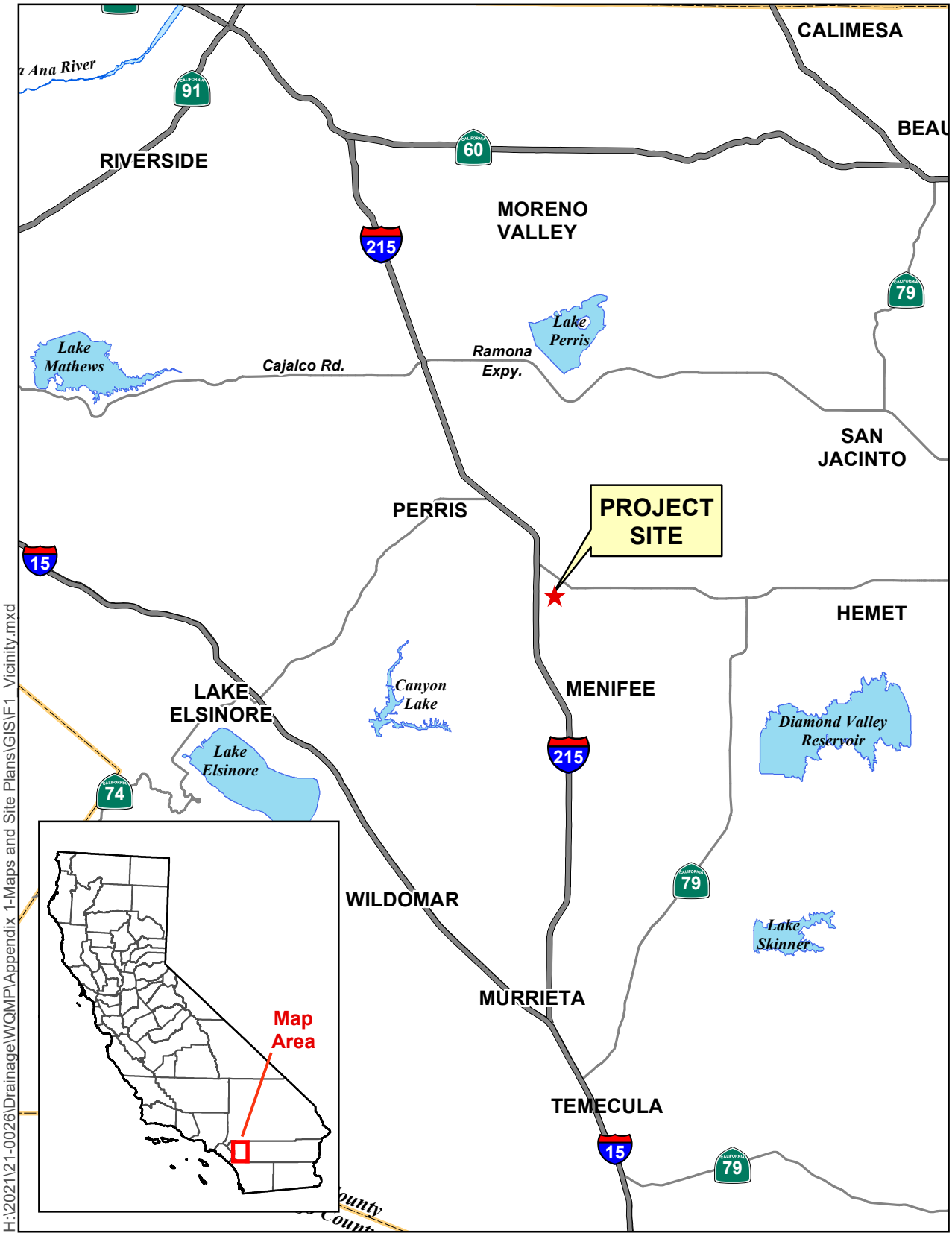
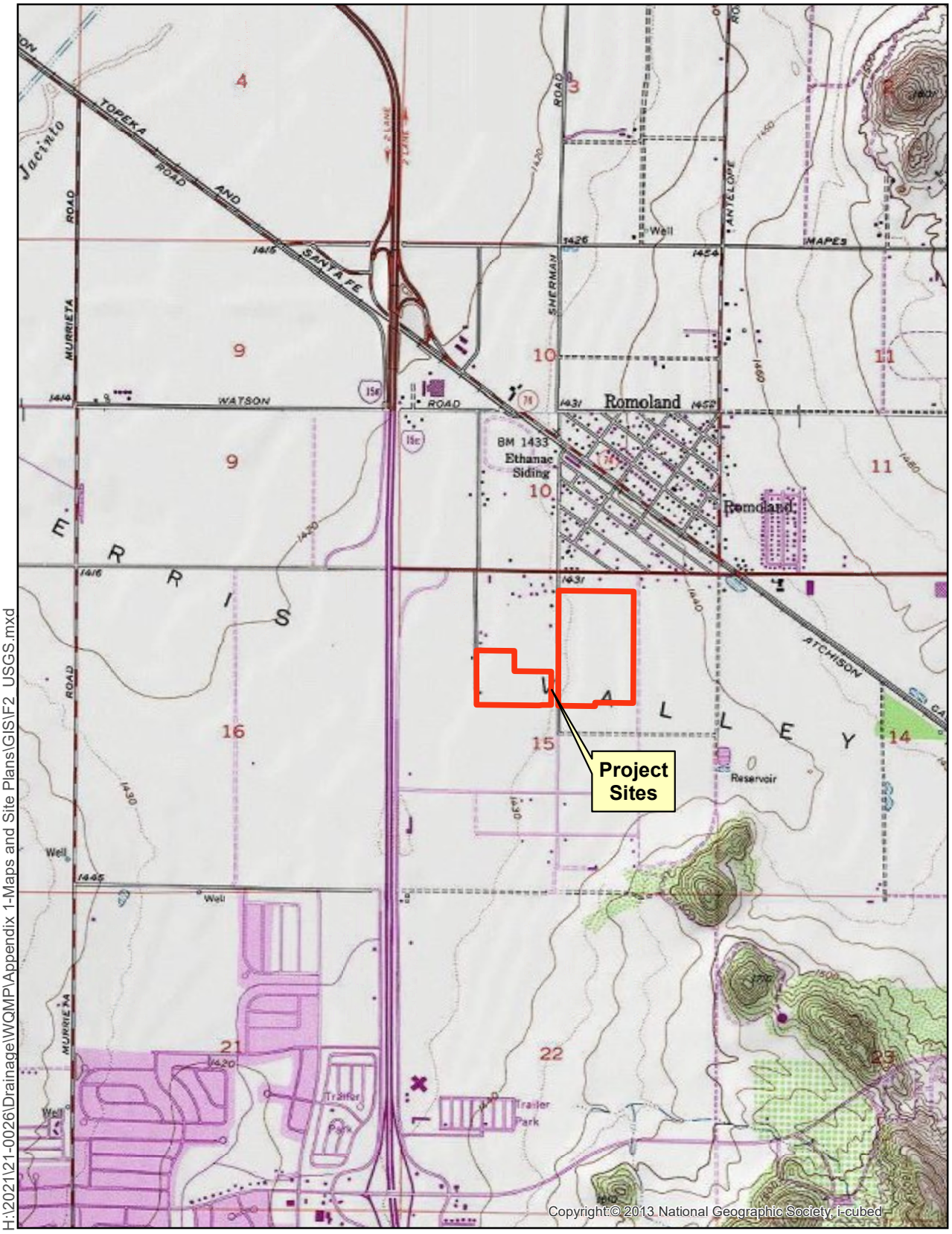


Figure 1. Vicinity Map

0 2.5 5 Miles



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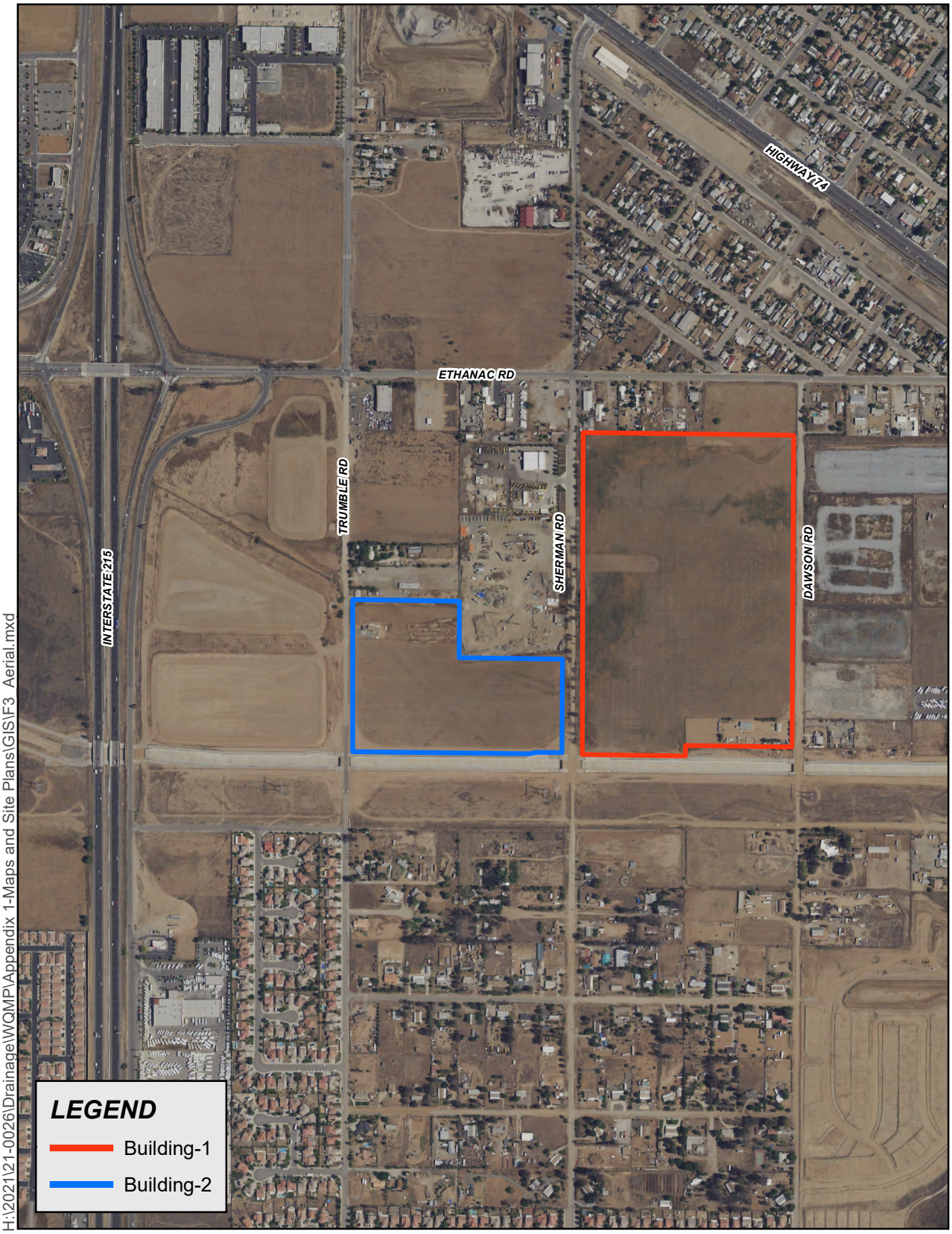
Sources: ESRI / USGS 7.5min Quad
DRGs: PERRIS

Figure 2. USGS Topography Map

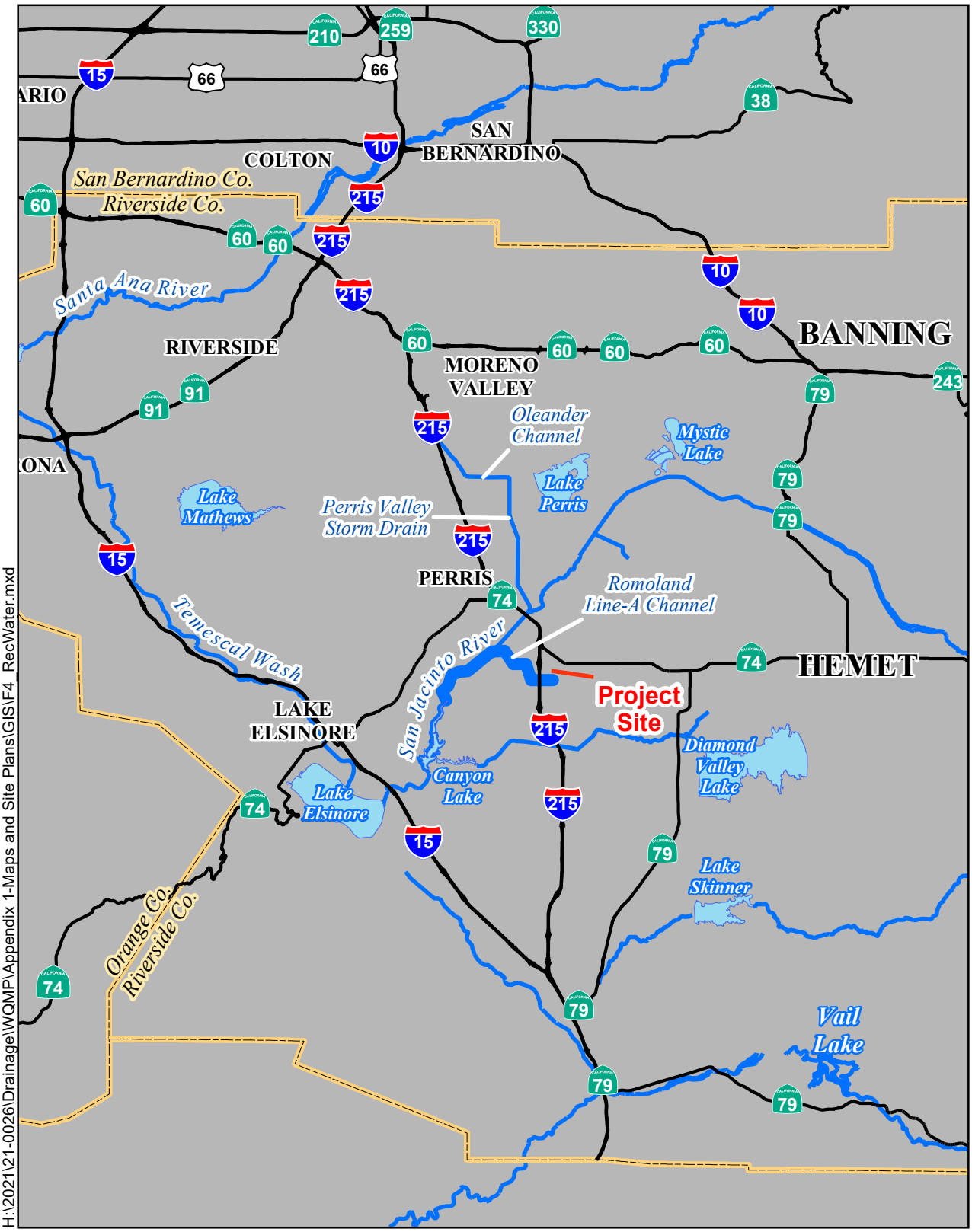
0 1,000 2,000
Feet



Sources: County of Riverside GIS, 2013; Eagle Aerial, April 2016.

Figure 3. Aerial Photograph

0 400 800 Feet



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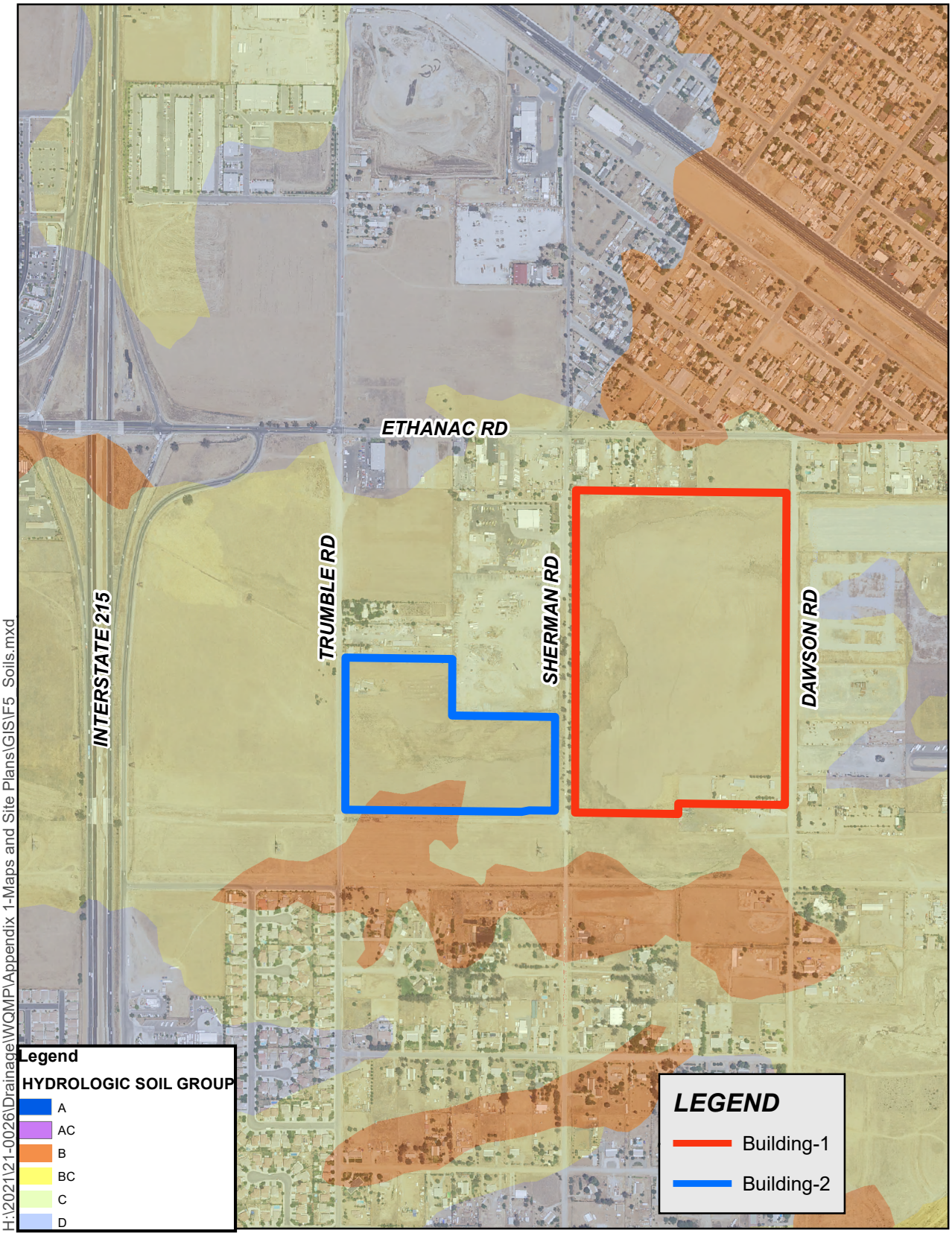
Sources: USGS 30 Meter DEM;
USGS Digital Line Graph

Figure 4. Receiving Waterbodies



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Eagle Aerial, April 2010;
Riverside County GIS, 2012
RCFC&WCD Hydology Manual Plate C-1.30

Figure 5. Soils Map

DRAINAGE MANAGEMENT AREAS

LEGEND	DMA-ID	TYPE	AREA (SF)
DMA-A (BUILDING-1)			
	L-A	LANDSCAPE	120,840
	SR-A	LANDSCAPE	61,000
	R-A	ROOF	1,105,450
	H-A	HARDSCAPE	842,820
	BMP-A	LANDSCAPE	900
	SELF TREATING-A	LANDSCAPE	76,740
DMA-B (BUILDING-2)			
	L-B	LANDSCAPE	56,770
	SR-B	LANDSCAPE	40,070
	R-B	ROOF	386,000
	H-B	HARDSCAPE	392,410
	BMP-B	LANDSCAPE	300
	SELF TREATING-B	LANDSCAPE	6,500
DMA-C (OFFSITE)			
	C-D-1	HARDSCAPE	27,160
	C-D-2	HARDSCAPE	72,240
	C-D-3	HARDSCAPE	22,850
	C-S-1	HARDSCAPE	85,330
	C-S-2	HARDSCAPE	106,860
	C-T	HARDSCAPE	59,400

LEGEND

- DRAINAGE MANAGEMENT BOUNDARY
- LANDSCAPING
- SELF-RETAINING
- ROOF
- CONCRETE OR ASPHALT
- WQ BASIN
- FLOW DIRECTION
- SD — ONSITE STORM DRAIN PIPE
- SD — OFFSITE STORM DRAIN PIPE
- SD — WATER QUALITY STORM DRAIN PIPE
- ROOF DRAIN DOWNSPOUT
- CURB OPENING/CUT
- STORM INLET
- TRASH ENCLOSURE

SHERMAN ROAD

TRUMBLE ROAD

ROMOLAND - LINE A

DMA-A
51.8 AC

DMA-B
20.2 AC

C-T
1.4 AC

C-S-1
2.0 AC

C-S-2
2.5 AC

C-D-1
0.6 AC

C-D-2
1.7 AC

C-D-3
0.5 AC

DETENTION BASIN-1

DETENTION BASIN-2

LINE-A DURASLOT TRENCH DRAIN

CURB OPENING MODULAR WETLAND
Q_{BMP}=0.1 CFS
$Q_{BMP, UNIT}$=0.05 CFS

CURB OPENING MODULAR WETLAND
Q_{BMP}=0.2 CFS
$Q_{BMP, UNIT}$=0.1 CFS

CURB OPENING MODULAR WETLAND
Q_{BMP}=0.4 CFS
$Q_{BMP, UNIT}$=0.2 CFS

CURB OPENING MODULAR WETLAND
Q_{BMP}=0.3 CFS
$Q_{BMP, UNIT}$=0.15 CFS

CURB OPENING MODULAR WETLAND
Q_{BMP}=0.3 CFS
$Q_{BMP, UNIT}$=0.15 CFS

CURB OPENING MODULAR WETLAND
Q_{BMP}=0.1 CFS
$Q_{BMP, UNIT}$=0.05 CFS

SPLITTER MANHOLE
RETAINS 91,500 FT³
FOR HCOC MITIGATION

BLDG-2 TOTAL
Q_{10}=32.4 CFS
Q_{100}=55.2 CFS

WATER QUALITY
LIFT STATION
1.0 CFS

BMP-B
BIOSCAPE MODULAR WETLAND
V_{BMP}=35,700 FT³

BLDG-1 TOTAL
Q_{10}=71.0 CFS
Q_{100}=132.5 CFS

SPLITTER MANHOLE
RETAINS 192,000 FT³
FOR HCOC MITIGATION

BMP-A
BIOSCAPE MODULAR WETLAND
V_{BMP}=92,000 FT³

WATER QUALITY LIFT STATION
2.5 CFS

LINE-A
LINE-A-1
LINE-A-1a
LINE-A-2
LINE-B
LINE-C
LINE-D
LAT A-1

N
W WEBB E
S

1" = 80'
80 0 80 160 240

PRELIMINARY

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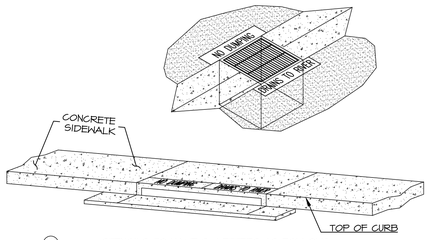
CITY OF MENIFEE

POST CONSTRUCTION B.M.P. SITE MAP
MENIFEE COMMERCE CENTER
PP2019-005
SITE PLAN

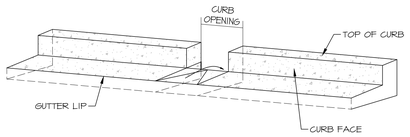
SCALE:	1"=80'	ALBERT A. WEBB ASSOCIATES	ENGINEERING CONSULTANTS 3788 McCRAY STREET RIVERSIDE CA. 92506 PH. (951) 686-1070 FAX (951) 788-1256
DATE:	8/6/21		
DESIGNED:	TSH		
CHECKED:	CV		
PLN CK REF.:			
F.B.			

W.O.	21-0026
SHEET	
OF	2 SHEETS
DWG. NO.	

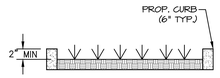


1. STENCILS TO HAVE 2" LETTERS AS FOLLOWS: "NO DUMPING - DRAINS TO RIVER"
2. PLACE BOTH STENCILS CENTERED WITHIN THE CATCHBASIN OPENINGS AND WITHIN THE TOP OF THE CURB.
3. SPRAY BOTH STENCILS WITH WHITE PAINT.
4. REMOVE STENCILS WHEN PAINT IS DRY.

CATCH BASIN STENCILING DETAIL
N.T.S.

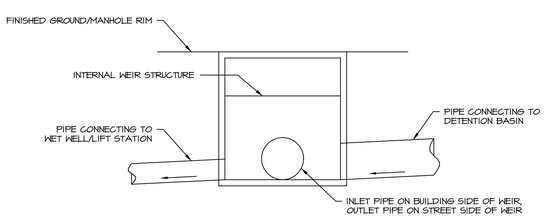


TYPICAL CURB OPENING DETAIL
N.T.S.

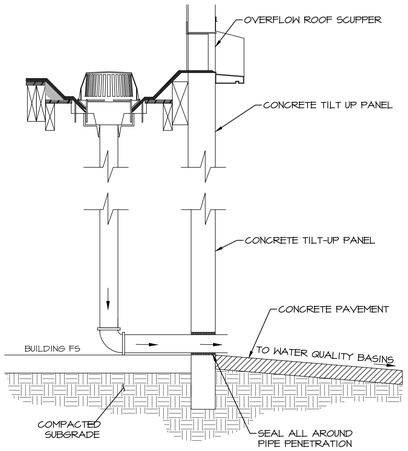


SELF-RETAINING FINGER ISLAND
N.T.S.

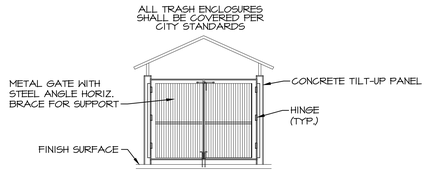
ALL SELF-RETAINING AREAS WILL BE DEPRESSED A MINIMUM OF 2-INCHES



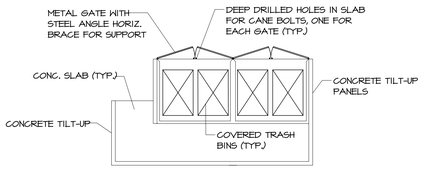
SPLITTER MANHOLE TYPICAL SECTION
N.T.S.



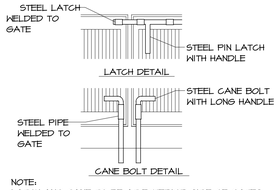
ROOF DRAIN DETAIL
N.T.S.



TRASH ENCLOSURE GATE ELEVATION
N.T.S.

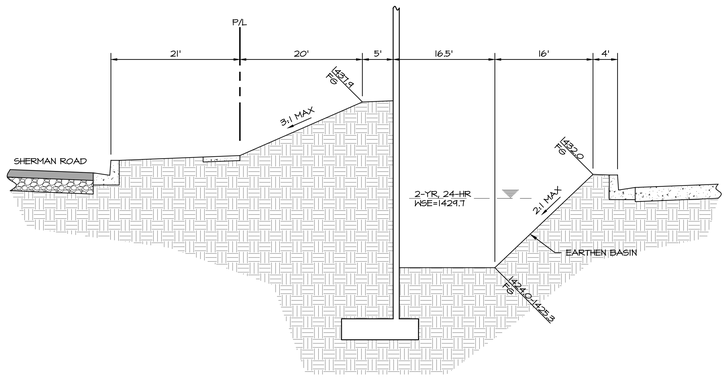


TRASH ENCLOSURE PLAN DETAIL
N.T.S.

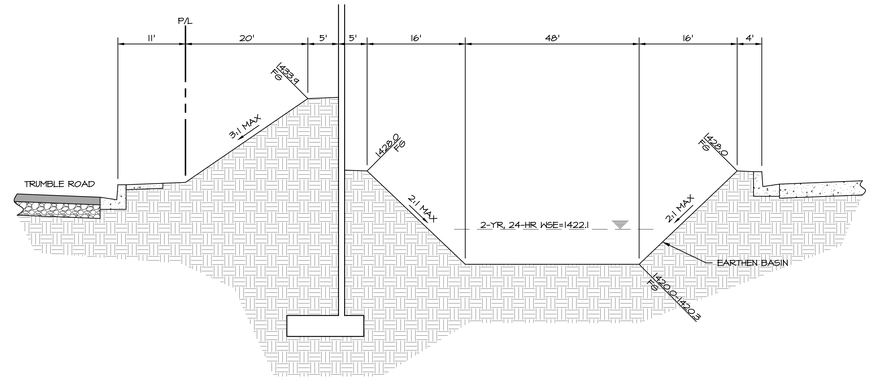


NOTE:
LATCH AND CANE TO BE AT EXTERIOR SIDE OF GATES

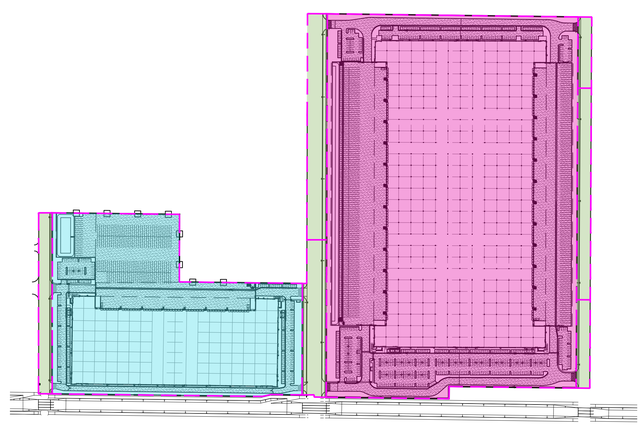
TRASH ENCLOSURE GATE LATCHES DETAIL
N.T.S.

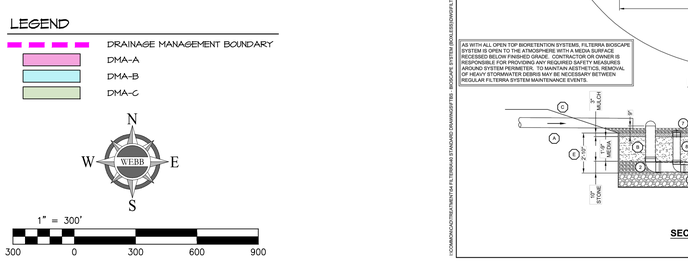


BASIN-1
N.T.S.

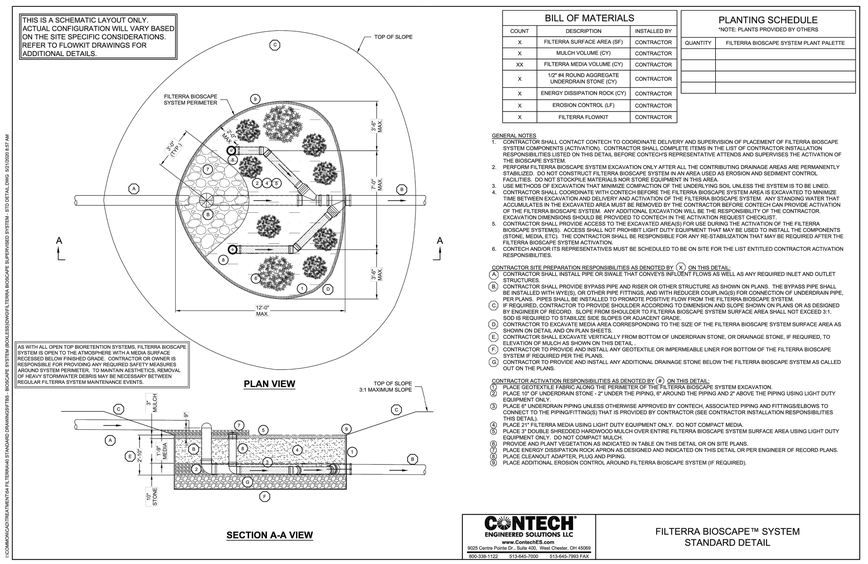


BASIN-2
N.T.S.





LEGEND



BILL OF MATERIALS

COUNT	DESCRIPTION	INSTALLED BY
X	FILTERRA SURFACE AREA (SF)	CONTRACTOR
X	MULCH VOLUME (CY)	CONTRACTOR
XX	FILTERRA MEDIA VOLUME (CY)	CONTRACTOR
X	1/2" #4 ROUND AGGREGATE UNDERDRAIN STONE (CY)	CONTRACTOR
X	ENERGY DISSIPATION ROCK (CY)	CONTRACTOR
X	EROSION CONTROL (LF)	CONTRACTOR
X	FILTERRA FLOWKIT	CONTRACTOR

PLANTING SCHEDULE
*NOTE: PLANTS PROVIDED BY OTHERS

QUANTITY	FILTERRA BIOSCAPE SYSTEM PLANT PALETTE

GENERAL NOTES
1. CONTRACTOR SHALL CONTACT CONTECH TO COORDINATE DELIVERY AND SUPERVISION OF PLACEMENT OF FILTERRA BIOSCAPE SYSTEM COMPONENTS (ACTIVATION). CONTRACTOR SHALL COMPLETE ITEMS IN THE LIST OF CONTRACTOR INSTALLATION RESPONSIBILITIES LISTED ON THIS DETAIL BEFORE CONTECH'S REPRESENTATIVE ATTENDS AND SUPERVISES THE ACTIVATION OF THE BIOSCAPE SYSTEM.
2. PERFORM FILTERRA BIOSCAPE SYSTEM EXCAVATION ONLY AFTER ALL THE CONTRIBUTING DRAINAGE AREAS ARE PERMANENTLY STABILIZED. DO NOT CONSTRUCT FILTERRA BIOSCAPE SYSTEM IN AN AREA USED AS EROSION AND SEDIMENT CONTROL FACILITIES. DO NOT STOCKPILE MATERIALS NOR STORE EQUIPMENT IN THIS AREA.
3. USE METHODS OF EXCAVATION THAT MINIMIZE COMPACTION OF THE UNDERLYING SOIL UNLESS THE SYSTEM IS TO BE LINED.
4. MINIMIZE TIME BETWEEN EXCAVATION AND ACTIVATION OF THE FILTERRA BIOSCAPE SYSTEM. ANY STANDING WATER THAT ACCUMULATES IN THE EXCAVATED AREA MUST BE REMOVED BY THE CONTRACTOR BEFORE CONTECH CAN PROVIDE ACTIVATION OF THE FILTERRA BIOSCAPE SYSTEM. ANY ADDITIONAL EXCAVATION WILL BE THE RESPONSIBILITY OF THE CONTRACTOR. EXCAVATION DIMENSIONS SHOULD BE PROVIDED TO CONTECH IN THE ACTIVATION REQUEST CHECKLIST.
5. CONTRACTOR SHALL PROVIDE ACCESS TO THE EXCAVATED AREA(S) FOR USE DURING THE ACTIVATION OF THE FILTERRA BIOSCAPE SYSTEM(S). ACCESS SHALL NOT PROHIBIT LIGHT DUTY EQUIPMENT THAT MAY BE USED TO INSTALL THE COMPONENTS (STONE, MEDIA, ETC). THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY RE-STABILIZATION THAT MAY BE REQUIRED AFTER THE FILTERRA BIOSCAPE SYSTEM ACTIVATION.
6. CONTECH AND/OR ITS REPRESENTATIVES MUST BE SCHEDULED TO BE ON SITE FOR THE LIST ENTITLED CONTRACTOR ACTIVATION RESPONSIBILITIES.

CONTRACTOR SITE PREPARATION RESPONSIBILITIES AS DENOTED BY (X) ON THIS DETAIL:
- (A) CONTRACTOR SHALL INSTALL PIPE OR SWALE THAT CONVEYS INFLUENT FLOWS AS WELL AS ANY REQUIRED INLET AND OUTLET STRUCTURES.
- (B) CONTRACTOR SHALL PROVIDE BYPASS PIPE AND RISER OR OTHER STRUCTURE AS SHOWN ON PLANS. THE BYPASS PIPE SHALL BE INSTALLED WITH WYE(S), OR OTHER PIPE FITTINGS, AND WITH REDUCER COUPLING(S) FOR CONNECTION OF UNDERDRAIN PIPE, PER PLANS. PIPES SHALL BE INSTALLED TO PROMOTE POSITIVE FLOW FROM THE FILTERRA BIOSCAPE SYSTEM.
- (C) IF REQUIRED, CONTRACTOR TO PROVIDE SHOULDER ACCORDING TO DIMENSION AND SLOPE SHOWN ON PLANS OR AS DESIGNED BY ENGINEER OF RECORD. SLOPE FROM SHOULDER TO FILTERRA BIOSCAPE SYSTEM SURFACE AREA SHALL NOT EXCEED 3:1.
- (D) CONTRACTOR TO EXCAVATE FILTERRA BIOSCAPE SYSTEM SURFACE AREA.
- (D) CONTRACTOR TO EXCAVATE MEDIA AREA CORRESPONDING TO THE SIZE OF THE FILTERRA BIOSCAPE SYSTEM SURFACE AREA AS SHOWN ON DETAIL AND ON PLAN SHEETS.
- (E) CONTRACTOR SHALL EXCAVATE VERTICALLY FROM BOTTOM OF UNDERDRAIN STONE, OR DRAINAGE STONE, IF REQUIRED, TO ELEVATION OF MULCH AS SHOWN ON THIS DETAIL.
- (F) CONTRACTOR TO PROVIDE AND INSTALL ANY GEOTEXTILE OR IMPERMEABLE LINER FOR BOTTOM OF THE FILTERRA BIOSCAPE SYSTEM IF REQUIRED PER THE PLANS.
- (G) CONTRACTOR TO PROVIDE AND INSTALL ANY ADDITIONAL DRAINAGE STONE BELOW THE FILTERRA BIOSCAPE SYSTEM AS CALLED OUT ON THE PLANS.

CONTRACTOR ACTIVATION RESPONSIBILITIES AS DENOTED BY (#) ON THIS DETAIL:
- (1) PLACE GEOTEXTILE FABRIC ALONG THE PERIMETER OF THE FILTERRA BIOSCAPE SYSTEM EXCAVATION.
- (2) PLACE 1/2" OF UNDERDRAIN STONE, -2" UNDER THE PIPING, 6" AROUND THE PIPING AND 2" ABOVE THE PIPING USING LIGHT DUTY EQUIPMENT ONLY.
- (3) PLACE 6" UNDERDRAIN PIPING UNLESS OTHERWISE APPROVED BY CONTECH. ASSOCIATED PIPING AND FITTINGS(ELBOWS TO CONNECT TO THE PIPING/FITTING(S) THAT IS PROVIDED BY CONTRACTOR (SEE CONTRACTOR INSTALLATION RESPONSIBILITIES THIS DETAIL).
- (4) PLACE 2'-0" FILTERRA MEDIA USING LIGHT DUTY EQUIPMENT ONLY. DO NOT COMPACT MEDIA.
- (5) PLACE 3" DOUBLE SHREDDED HARDWOOD MULCH OVER ENTIRE FILTERRA BIOSCAPE SYSTEM SURFACE AREA USING LIGHT DUTY EQUIPMENT. DO NOT COMPACT MULCH.
- (6) PLACE TREES, SHRUBS AND COVER AS INDICATED IN TABLE ON THIS DETAIL OR ON SITE PLANS.
- (7) PLACE ENERGY DISSIPATION ROCK APRON AS DESIGNED AND INDICATED ON THIS DETAIL OR PER ENGINEER OF RECORD PLANS.
- (8) PLACE CLEANOUT ADAPTER, PLUG AND PIPING.
- (9) PLACE ADDITIONAL EROSION CONTROL AROUND FILTERRA BIOSCAPE SYSTEM (IF REQUIRED).

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

FILTERRA BIOSCAPE™ SYSTEM
STANDARD DETAIL

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PRELIMINARY

CITY OF MENIFEE

POST CONSTRUCTION B.M.P. SITE MAP
MENIFEE COMMERCE CENTER
PP2019-005
DETAILS

SCALE:	1"=80'
DATE:	8/6/21
DESIGNED:	TSH
CHECKED:	CV
PLN CK REF:	
F.B.	

ALBERT A. WEBB ASSOCIATES
ENGINEERING CONSULTANTS
3788 McCRAY STREET
RIVERSIDE CA. 92506
PH. (951) 686-1070
FAX (951) 788-1256

W.O.	21-0026
SHEET	2
OF	2 SHEETS
DWG. NO.	

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Appendix 2: Construction Plans

Grading and Drainage Plans

*To be included in final WQMP

Appendix 3: Soils Information

Geotechnical Study and Other Infiltration Testing Data

Earth Strata Geotechnical Services, Inc.
Geotechnical, Environmental and Materials Testing Consultants

May 29, 2018

Project No. 182161-10A

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Subject: **Preliminary Geotechnical Interpretive Report, Proposed Motte Rancon Distribution Center (MR-DC), Assessor's Parcel Numbers 331-110-027, 331-110-035, 331-110-041, 331-140-010, and 331-140-025, Lot Numbers 37, 58, 68, and 94 of Trumble Farms Subdivision, Located South of Ethanac Road, East of Trumble Road and West of Dawson Road, City of Menifee, Riverside County, California**

Earth Strata Geotechnical Services is pleased to present our preliminary geotechnical interpretive report for the proposed Motte Rancon Distribution Center (MR-DC), Assessor's Parcel Numbers 331-110-027, 331-110-035, 331-110-041, 331-140-010, and 331-140-025, Lot Numbers 37, 58, 68, and 94 of Trumble Farms Subdivision, located South of Ethanac Road, East of Trumble Road, and West of Dawson Road in the City of Menifee, Riverside County, California. This work was performed in accordance with the scope of work described in our proposal, dated March 27, 2018. The purpose of this study is to evaluate the nature, distribution, engineering properties, and geologic strata underlying the site with respect to the proposed development.

Earth Strata Geotechnical Services appreciates the opportunity to offer our consultation and advice on this project. In the event that you have any questions, please do not hesitate to contact the undersigned at your earliest convenience.

Respectfully submitted,

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INTRODUCTION

Earth Strata Geotechnical Services is pleased to present our preliminary geotechnical interpretive report for the proposed development. The purpose of this study was to evaluate the nature, distribution, engineering properties, and geologic strata underlying the site with respect to the proposed development, and then provide preliminary grading and foundation design recommendations based on the plans you provided. The general location of the subject property is indicated on the Vicinity Map, Figure 1. The plans you provided were used as the base map to show geologic conditions within the subject site, see Geotechnical Map, Plate 1.

SITE DESCRIPTION

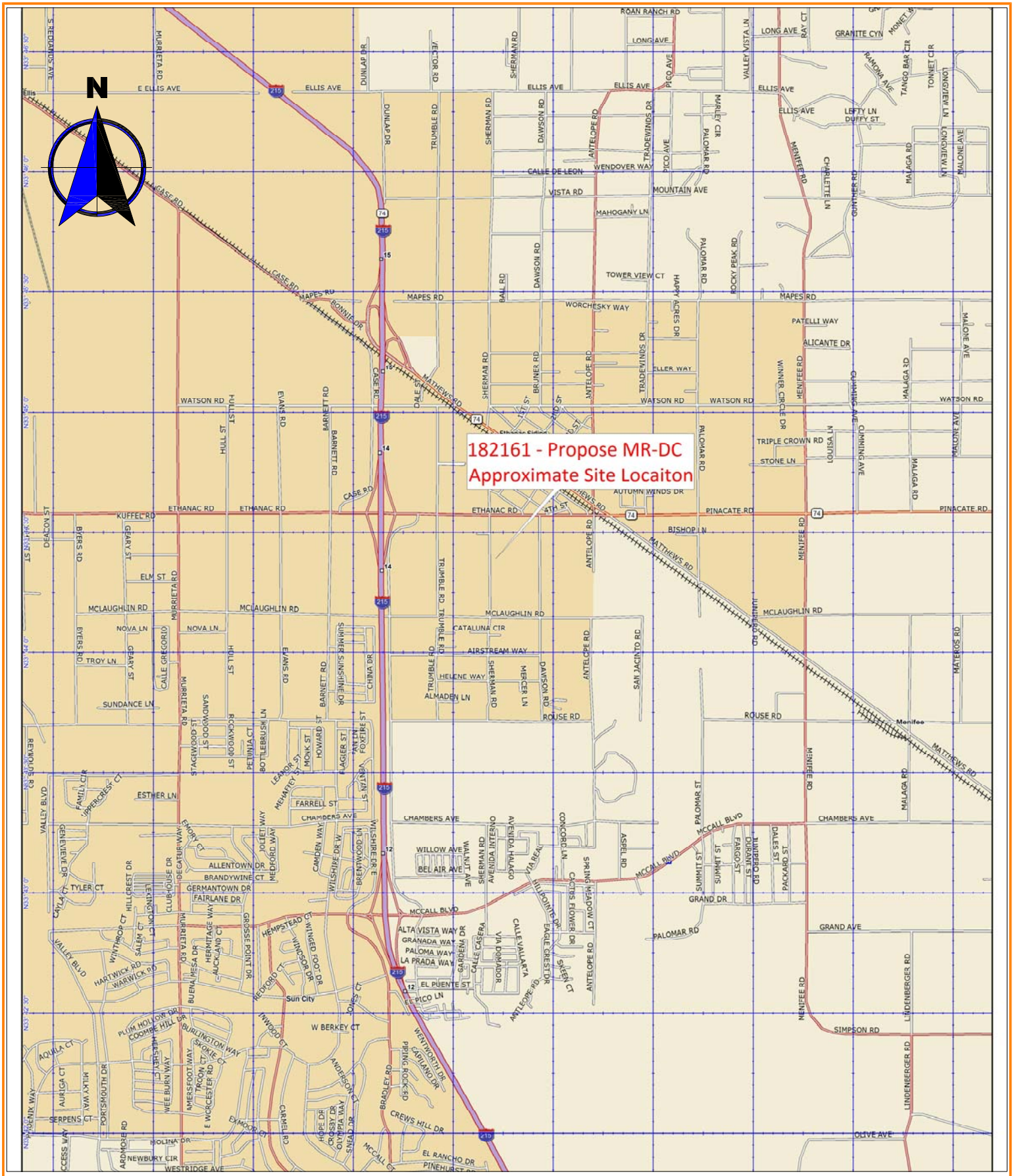
The subject property is located south of Ethanac Road, east of Trumble Road, and west of Dawson Road in the City of Menifee, Riverside County, California. The approximate location of the site is shown on the Vicinity Map, Figure 1.

The subject property is comprised of five (5) undeveloped parcels of land totaling approximately 76.38 acres. Topographic relief at the subject property is relatively low with the terrain being generally flat. Elevations at the site range from approximately 1,430 to 1,440 feet above mean sea level (msl), for a difference of about 10± feet across the entire site. Drainage within the subject property generally flows to the west.

The site is currently bordered by residential and commercial development, as well as vacant property to the west. Most of the vegetation on the site consists of moderate amounts of annual weeds/grasses, along with small to large trees throughout the subject site.

PROPOSED DEVELOPMENT AND GRADING

The proposed industrial development is expected to consist of concrete, wood or steel framed one- and/or two-story structures utilizing slab on grade construction with associated streets, landscape areas, and utilities. The current development plans include two (2) building pads positioned throughout the site. The plans provided by you were utilized in our exploration and form the base for our Geotechnical Map, Plate 1.



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PROPOSED MR-DC		182161-10A
VICINITY MAP	SCALE 1:40,625	
	MAY 2018	FIGURE 1

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FIELD EXPLORATION AND LABORATORY TESTING

Field Exploration

Subsurface exploration within the subject site was performed on May 4, May 15, and May 17, 2018 for the exploratory excavations. A truck mounted hollow-stem-auger drill rig was utilized to drill twelve (12) borings throughout the site to a maximum depth of 16.5 feet. An underground utilities clearance was obtained from Underground Service Alert of Southern California, prior to the subsurface exploration.

Earth materials encountered during exploration were classified and logged in general accordance with the Standard Practice for Description and Identification of Soils (Visual-Manual Procedure) of ASTM D 2488. Upon completion of laboratory testing, exploratory logs and sample descriptions may have been reconciled to reflect laboratory test results with regard to ASTM D 2487.

Associated with the subsurface exploration was the collection of bulk (disturbed) samples and relatively undisturbed samples of earth materials for laboratory testing and analysis. The relatively undisturbed samples were obtained with a 3 inch outside diameter modified California split-spoon sampler lined with 1-inch-high brass rings. Samples obtained using a hollow stem auger drill rig, were mechanically driven with successive 30 inch drops of a 140-pound automatic trip safety hammer. The blow count per one-foot increment was recorded in the boring logs. The central portions of the driven samples were placed in sealed containers and transported to our laboratory for testing and analysis. The approximate exploratory locations are shown on Plate 1 and descriptive logs are presented in Appendix B.

Laboratory Testing

Maximum dry density/optimum moisture content, expansion potential, pH, resistivity, sulfate content, chloride content, and in-situ density/moisture content were determined for selected undisturbed and bulk samples of earth materials, considered representative of those encountered. An evaluation of the test data is reflected throughout the Conclusions and Recommendations section of this report. A brief description of laboratory test criteria and summaries of test data are presented in Appendix C.

FINDINGS

Regional Geology

Regionally, the site is located in the Peninsular Ranges Geomorphic Province of California. The Peninsular Ranges are characterized by northwest trending steep mountain ranges separated by sediment filled elongated valleys. The dominant structural geologic features reflect the northwest trend of the province. Associated with and subparallel to the San Andreas Fault are the San Jacinto Fault, Newport-Inglewood, and the Whittier-Elsinore Fault. The Santa Ana Mountains abut the west side of the Elsinore Fault while the Perris Block forms the other side of the fault zone to the east. The Perris Block is bounded to the east by the San Jacinto Fault. The northern perimeter of the Los Angeles basin forms part of a northerly dipping blind thrust fault at the boundary between the Peninsular Ranges Province and the Transverse Range Province.

The mountainous regions within the Peninsular Ranges Province are comprised of Pre-Cretaceous, metasedimentary, and metavolcanic rocks along with Cretaceous plutonic rocks of the Southern California

Batholith. The low lying areas are primarily comprised of Tertiary and Quaternary non-marine alluvial sediments consisting of alluvial deposits, sandstones, claystones, siltstones, conglomerates, and occasional volcanic units. A map illustrating the regional geology is presented on the Regional Geologic Map, Figure 2.

Local Geology

The earth materials on the site are primarily comprised of Quaternary alluvial materials. A general description of the dominant earth materials observed on the site is provided below:

- Quaternary Old Alluvial Fan Deposits (map symbol Qof): Quaternary old fan deposits were encountered to the full depth of our exploration. These alluvial deposits consist predominately of interlayered reddish brown to yellowing brown, fine to coarse grained clayey sand, silty sand, and sandy silt. These deposits were generally noted to be in a dry to slightly moist, medium dense to very dense state.

Faulting

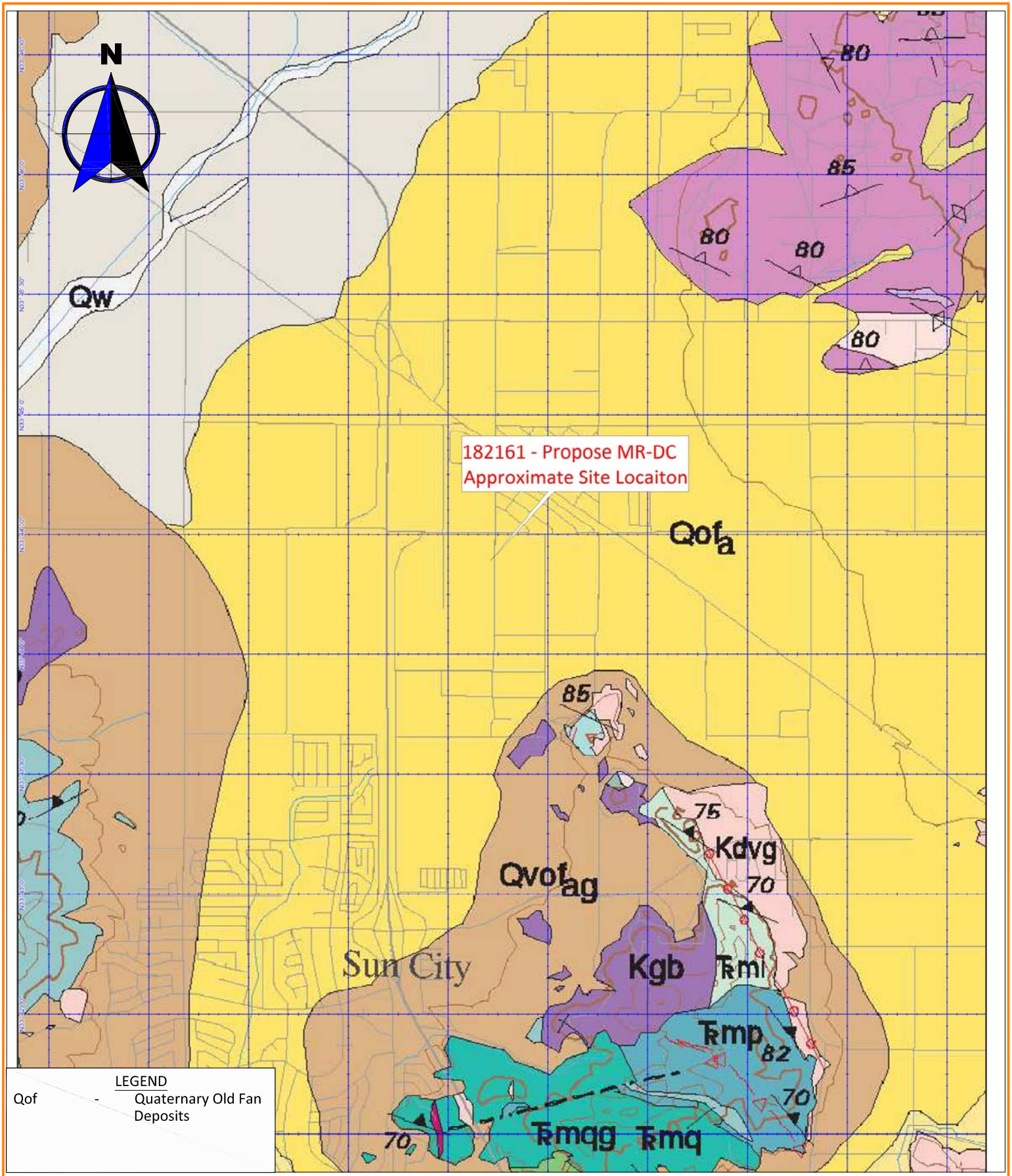
The project is located in a seismically active region and as a result, significant ground shaking will likely impact the site within the design life of the proposed project. The geologic structure of the entire southern California area is dominated by northwest-trending faults associated with the San Andreas Fault system, which accommodates for most of the right lateral movement associated with the relative motion between the Pacific and North American tectonic plates. Known active faults within this system include the Newport-Inglewood, Whittier-Elsinore, San Jacinto and San Andreas Faults.

No active faults are known to project through the site and the site is not located within an Alquist-Priolo Earthquake Fault Zone, established by the State of California to restrict the construction of new habitable structures across identifiable traces of known active faults. An active fault is defined by the State of California as having surface displacement within the past 11,000 years or during the Holocene geologic time period. Based on our mapping of the subject site, review of current and historical aerial imagery, lack of lineaments indicative of active faulting, and the data compiled during the preparation of this report, it is our interpretation that the potential for surface rupture to adversely impact the proposed structures is very low to remote.

Based on our review of regional geologic maps and applicable computer programs (USGS 2008 Interactive Deaggregation, Caltrans ARS online, and USGS Earthquake Hazard Programs), the Elsinore Fault with an approximate source to site distance of 15.21 kilometers is the closest known active fault anticipated to produce the highest ground accelerations, with an anticipated maximum modal magnitude of 7.7. A list of faults as well as a list of significant historical seismic events within a 100km radius of the subject site are included in Appendix D.

Landslides

Landslide debris was not observed during our subsurface exploration and no ancient landslides are known to exist on the site. No landslides are known to exist, or have been mapped, in the vicinity of the site. Geologic mapping of the site conducted during our investigation, and review of aerial imagery of the site, reveal no geomorphic expressions indicative of landsliding.



REFERNCES: Morton, D.M., Hauser, Rachel M., and Ruppert, Kelly R., 2004, Preliminary Digital Geologic Map of the San Bernardino and Santa Ana 30' x 60' Quadrangle, Southern California, Version 2.0: U.S. Geological Survey Open-File Report 99-0172.

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PROPOSED MR-DC	182161-10A
REGIONAL GEOLOGIC MAP	SCALE 1:40,625
	MAY 2018 FIGURE 2

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CONCLUSIONS AND RECOMMENDATIONS

General

From geotechnical and engineering geologic points of view, the subject property is considered suitable for the proposed development, provided the following conclusions and recommendations are incorporated into the plans and are implemented during construction.

Earthwork

Earthwork and Grading

The provisions of the 2016 California Building Code (CBC), including the General Earthwork and Grading Specifications in the last Appendix of this report, should be applied to all earthwork and grading operations, as well as in accordance with all applicable grading codes and requirements of the appropriate reviewing agency. Unless specifically revised or amended herein, grading operations should also be performed in accordance with applicable provisions of our General Earthwork and Grading Specifications within the last appendix of this report.

Clearing and Grubbing

Vegetation including trees, grasses, weeds, brush, shrubs, or any other debris should be stripped from the areas to be graded and properly disposed of offsite. In addition, laborers should be utilized to remove any roots, branches, or other deleterious materials during grading operations.

Earth Strata Geotechnical Services should be notified at the appropriate times to provide observation and testing services during Clearing and Grubbing operations. Any buried structures or unanticipated conditions should be brought to our immediate attention.

Excavation Characteristics

Based on the results of our exploration and experience with similar projects in similar settings, the near surface earth materials, will be readily excavated with conventional earth moving equipment.

Groundwater

Groundwater was not observed during our subsurface exploration. Local well data dating back to 1995 indicates regional groundwater highs approximately 101 feet below existing ground surface. It should be noted that localized groundwater could be encountered during grading due to the limited number of exploratory locations or other factors.

Ground Preparation for Fill Areas

For each area to receive compacted fill, the removal of low density, compressible earth materials, such as upper alluvial materials, should continue until firm competent alluvium is encountered. Removal excavations are subject to verification by the project engineer, geologist or their representative. Prior to placing compacted fills, the exposed bottom in each removal area should

be scarified to a depth of 6 inches or more, watered or air dried as necessary to achieve near optimum moisture conditions and then compacted to a minimum of 90 percent of the maximum dry density determined by ASTM D 1557.

The intent of remedial grading is to diminish the potential for hydro-consolidation, slope instability, and/or settlement. Remedial grading should extend beyond the perimeter of the proposed structures a horizontal distance equal to the depth of excavation or a minimum of 5 feet, whichever is greater. For cursory purposes the anticipated removal depths are shown on the enclosed Geotechnical Map, Plate 1. In general, the anticipated removal depths should vary from 3 to 5 feet below existing grade.

Wet Removals

Wet alluvial materials will probably not be encountered within the low lying areas of the site. If removals of wet alluvial materials are required, special grading equipment and procedures can greatly reduce overall costs. Careful planning by an experienced grading contractor can reduce the need for special equipment, such as swamp cats, draglines, excavators, pumps, and top loading earthmovers. Possible solutions may include the placement of imported angular rock and/or geotextile ground reinforcement. More specific recommendations can be provided based on the actual conditions encountered. Drying or mixing of wet materials with dry materials will be needed to bring the wet materials to near optimum moisture prior to placing wet materials into compacted fills.

Oversize Rock

Oversize rock is not expected to be encountered during grading. Oversize rock that is encountered (i.e., rock exceeding a maximum dimension of 12 inches) should be disposed of offsite or stockpiled onsite and crushed for future use. The disposal of oversize rock is discussed in greater detail in General Earthwork and Grading Specifications within the last appendix of this report.

Compacted Fill Placement

Compacted fill materials should be placed in 6 to 8 inch maximum (uncompacted) lifts, watered or air dried as necessary to achieve uniform near optimum moisture content and then compacted to a minimum of 90 percent of the maximum dry density determined by ASTM D 1557.

Import Earth Materials

Should import earth materials be needed to achieve final design grades, all potential import materials should be free of deleterious/oversize materials, non-expansive, and approved by the project geotechnical consultant prior to delivery onsite.

Stabilization Fills

Currently, stabilization fills will not be required for cut slopes in the alluvium. Our engineering geologist or his representative should be called to evaluate all slopes during grading. In the event

that unfavorable geologic conditions are encountered, recommendations for stabilization fills or flatter slopes will be provided.

Temporary Backcuts

It is the responsibility of the grading contractor to follow all Cal-OSHA requirements with regard to excavation safety. Where existing developments are upslope, adequate slope stability to protect those developments must be maintained. Temporary backcuts will be required to accomplish removals of unsuitable materials and possibly, to perform canyon removals, stabilization fills, and/or keyways. Backcuts should be excavated at a gradient of 1:1 (h:v) or flatter. Flatter backcuts may be required where geologic structure or earth materials are unfavorable. It is imperative that grading schedules minimize the exposure time of the unsupported excavations. All excavations should be stabilized within 30 days of initial excavation.

Cut/Fill Transitions

Cut/fill transitions should be eliminated from all building areas where the depth of fill placed within the "fill" portion exceeds proposed footing depths. This is to diminish distress to structures resulting from excessive differential settlement. The entire foundation of each structure should be founded on a uniform bearing material. This should be accomplished by overexcavating the "cut" portion and replacing the excavated materials as properly compacted fill. Refer to the following table for recommended depths of overexcavation.

DEPTH OF FILL ("fill" portion)	DEPTH OF OVEREXCAVATION ("cut" portion)
Up to 5 feet	Equal Depth
5 to 10 feet	5 feet
Greater than 10 feet	One-half the thickness of fill placed on the "fill" portion (10 feet maximum)

Overexcavation of the "cut" portion should extend beyond the building perimeter a horizontal distance equal to the depth of overexcavation or a minimum of 5 feet, whichever is greater.

Cut Areas

In cut areas, an area a minimum of 5 feet beyond the footprint of the proposed structures should overexcavated until; competent bottoms are achieved; to a minimum 3 feet below the proposed foundations; or per the Overexcavation Table above; (whichever is greater) and replaced with compacted fill. Final determination of areas that require overexcavation should be determined in the field by a representative of Earth Strata Geotechnical Services.

Shrinkage, Bulking and Subsidence

Volumetric changes in earth material quantities will occur when poorly consolidated earth materials are replaced with properly compacted fill. Estimates of the percent shrinkage/bulking factors for the various geologic units observed on the subject property are based on in-place densities and on the estimated average percent of relative compaction achieved during grading.

GEOLOGIC UNIT	SHRINKAGE (%)
Alluvium	10 to 15

Subsidence from scarification and recompaction of exposed bottom surfaces is expected to be negligible to approximately 0.01 foot.

The estimates of shrinkage/bulking and subsidence are intended as an aid for project engineers in determining earthwork quantities. Since many variables can affect the accuracy of these estimates, they should be used with caution and contingency plans should be in place for balancing the project.

Geotechnical Observations

Clearing operations, removal of unsuitable materials, and general grading procedures should be observed by the project geotechnical consultant or his representative. No compacted fill should be placed without observations by the geotechnical consultant or his representative to verify the adequacy of the removals.

The project geotechnical consultant or his representative should be present to observe grading operations and to check that minimum compaction requirements and proper lift thicknesses are being met, as well as to verify compliance with the other recommendations presented herein.

Post Grading Considerations

Slope Landscaping and Maintenance

Adequate slope and building pad drainage is essential for the long term performance of the subject site. The gross stability of graded slopes should not be adversely affected, provided all drainage provisions are properly constructed and maintained. Engineered slopes should be landscaped with deep rooted, drought tolerant maintenance free plant species, as recommended by the project landscape architect.

Site Drainage

Control of site drainage is important for the performance of the proposed project. Roof gutters are recommended for the proposed structures. Pad and roof drainage should be collected and transferred to driveways, adjacent streets, storm-drain facilities, or other locations approved by the building official in non-erosive drainage devices. Drainage should not be allowed to pond on the pad or against any foundation or retaining wall. Drainage should not be allowed to flow uncontrolled over any descending slope. Planters located within retaining wall backfill should be sealed to prevent moisture intrusion into the backfill. Planters located next to structures should be sealed to the depth of the footings. Drainage control devices require periodic cleaning, testing and maintenance to remain effective.

At a minimum, pad drainage should be designed at the minimum gradients required by the CBC. To divert water away from foundations, the ground surface adjacent to foundations should also be graded at the minimum gradients required per the CBC.

Utility Trenches

All utility trench backfill should be compacted at near optimum moisture to a minimum of 90 percent of the maximum dry density determined by ASTM D 1557. For utility trench backfill within pavement areas the upper 6 inches of subgrade materials should be compacted to 95 percent of the maximum dry density determined by ASTM D 1557. This includes within the street right-of-ways, utility easements, under footings, sidewalks, driveways and building floor slabs, as well as within or adjacent to any slopes. Backfill should be placed in approximately 6 to 8 inch maximum loose lifts and then mechanically compacted with a hydro-hammer, rolling with a sheepsfoot, pneumatic tampers, or similar equipment. The utility trenches should be tested by the project geotechnical engineer or their representative to verify minimum compaction requirements are obtained.

In order to minimize the penetration of moisture below building slabs, all utility trenches should be backfilled with compacted fill, lean concrete or concrete slurry where they undercut the perimeter foundation. Utility trenches that are proposed parallel to any building footings (interior and/or exterior trenches), should not be located within a 1:1 (h:v) plane projected downward from the outside bottom edge of the footing.

SEISMIC DESIGN CONSIDERATIONS

Ground Motions

Structures are required to be designed and constructed to resist the effects of seismic ground motions as provided in the 2016 California Building Code Section 1613. The design is dependent on the site class, occupancy category I, II, III, or IV, mapped spectral accelerations for short periods (S_s), and mapped spectral acceleration for a 1-second period (S_1).

In order for structural design to comply with the 2016 CBC, the USGS "US Seismic Design Maps" online tool was used to compile spectral accelerations for the subject property based on data and maps jointly compiled by the United States Geological Survey (USGS) and the California Geological Survey (CGS). The data found in the following table is based on the Maximum Considered Earthquake (MCE) with 5% damped ground motions having a 2% probability of being exceeded in 50 years (2,475 year return period).

The seismic design coefficients were determined by a combination of the site class, mapped spectral accelerations, and occupancy category. The following seismic design coefficients should be implemented during design of the proposed structures. Summaries of the Seismic Hazard Deaggregation graphs and test data are presented in Appendix D.

2016 CBC	FACTOR
Site Location	Latitude: 33.738063˚ (North) Longitude: -117.179489˚(West)
Site Class	D
Mapped Spectral Accelerations for short periods, S_S	1.500 g
Mapped Spectral Accelerations for 1-Second Period, S_1	0.600 g
Maximum Considered Earthquake Spectral Response Acceleration for Short Periods, S_{MS}	1.500 g
Maximum Considered Earthquake Spectral Response Acceleration for 1-Second Period, S_{M1}	0.900g
Design Spectral Response Acceleration for Short Periods, S_{DS}	1.000 g
Design Spectral Response Acceleration for 1-Second Period, S_{D1}	0.600 g
Seismic Design Category	D
Importance Factor Based on Occupancy Category	II

We performed the probabilistic seismic hazard assessment for the site in accordance with the 2016 CBC, Section 1803.5.11 and 1803.5.12. The probabilistic seismic hazard maps and data files were jointly prepared by the United States Geological Survey (USGS) and the California Geological Survey (CGS) and can be found at the CGS Probabilistic Seismic Hazards Mapping Ground Motion Page. Actual ground shaking intensities at the site may be substantially higher or lower based on complex variables such as the near source directivity effects, depth and consistency of earth materials, topography, geologic structure, direction of fault rupture, and seismic wave reflection, refraction, and attenuation rates. The mean peak ground acceleration was calculated to be 0.500 g.

Secondary Seismic Hazards

Secondary effects of seismic shaking considered as potential hazards include several types of ground failure as well as induced flooding. Different types of ground failure, which could occur as a consequence of severe ground shaking at the site, include landslides, ground lurching, shallow ground rupture, and liquefaction/lateral spreading. The probability of occurrence of each type of ground failure depends on the severity of the earthquake, distance from faults, topography, the state of subsurface earth materials, groundwater conditions, and other factors. Based on our experience, subsurface exploration, and laboratory testing, all of the above secondary effects of seismic activity are considered unlikely.

Seismically induced flooding is normally a consequence of a tsunami (seismic sea wave), a seiche (i.e., a wave-like oscillation of surface water in an enclosed basin that may be initiated by a strong earthquake) or failure of a major reservoir or retention system up gradient of the site. Since the site is at an elevation of more than 1,400 feet above mean sea level and is located more than 30 miles inland from the nearest coastline of the Pacific Ocean, the potential for seismically induced flooding due to a tsunami is considered nonexistent. Since no enclosed bodies of water lie adjacent to or up gradient of the site, the likelihood for induced flooding due to a dam failure or a seiche overcoming the dam's freeboard is considered nonexistent.

Liquefaction and Lateral Spreading

Liquefaction occurs as a result of a substantial loss of shear strength or shearing resistance in loose, saturated, cohesionless earth materials subjected to earthquake induced ground shaking. Potential impacts from liquefaction include loss of bearing capacity, liquefaction related settlement, lateral movements, and surface manifestation such as sand boils. Seismically induced settlement occurs when loose sandy soils become denser when subjected to shaking during an earthquake. The three factors determining whether a site is likely to be subject to liquefaction include seismic shaking, type and consistency of earth materials, and groundwater level. The proposed structures will be supported by compacted fill and competent alluvium, with groundwater at a depth of approximately 100 feet. As such, the potential for earthquake induced liquefaction and lateral spreading beneath the proposed structures is considered very low to remote due to the recommended compacted fill, relatively low groundwater level, and the dense nature of the deeper onsite earth materials.

TENTATIVE FOUNDATION DESIGN RECOMMENDATIONS

General

Provided grading is performed in accordance with the recommendations of this report, shallow foundations are considered feasible for support of the proposed structures. Tentative foundation recommendations are provided herein and graphic presentations of relevant recommendations may also be included on the enclosed map.

Allowable Bearing Values

An allowable bearing value of 2,000 pounds per square foot (psf) is recommended for design of 24-inch square pad footings and 12-inch-wide continuous footings founded at a minimum depth of 12 inches below the lowest adjacent final grade. This value may be increased by 20 percent for each additional 1-foot of width and/or depth to a maximum value of 2,500 psf. Recommended allowable bearing values include both dead and frequently applied live loads and may be increased by one third when designing for short duration wind or seismic forces.

Settlement

Based on the settlement characteristics of the earth materials that underlie the building sites and the anticipated loading, we estimate that the maximum total settlement of the footings will be less than approximately ¾ inch. Differential settlement is expected to be about ½ inch over a horizontal distance of approximately 20 feet, for an angular distortion ratio of 1:480. It is anticipated that the majority of the settlement will occur during construction or shortly after the initial application of loading.

The above settlement estimates are based on the assumption that the grading and construction are performed in accordance with the recommendations presented in this report and that the project geotechnical consultant will observe or test the earth material conditions in the footing excavations.

Lateral Resistance

Passive earth pressure of 250 psf per foot of depth to a maximum value of 2,500 psf may be used to establish lateral bearing resistance for footings. For areas coved with hardscape, passive earth pressure may be taken from the surface. For areas without hardscape, the first 3 feet of the soil profile must be neglected when calculating passive earth pressure. A coefficient of friction of 0.36 times the dead load forces may be used between concrete and the supporting earth materials to determine lateral sliding resistance. The above values may be increased by one-third when designing for short duration wind or seismic forces. When combining passive and friction for lateral resistance, the passive component should be reduced by one third. In no case shall the lateral sliding resistance exceed one-half the dead load for clay, sandy clay, sandy silty clay, silty clay, and clayey silt.

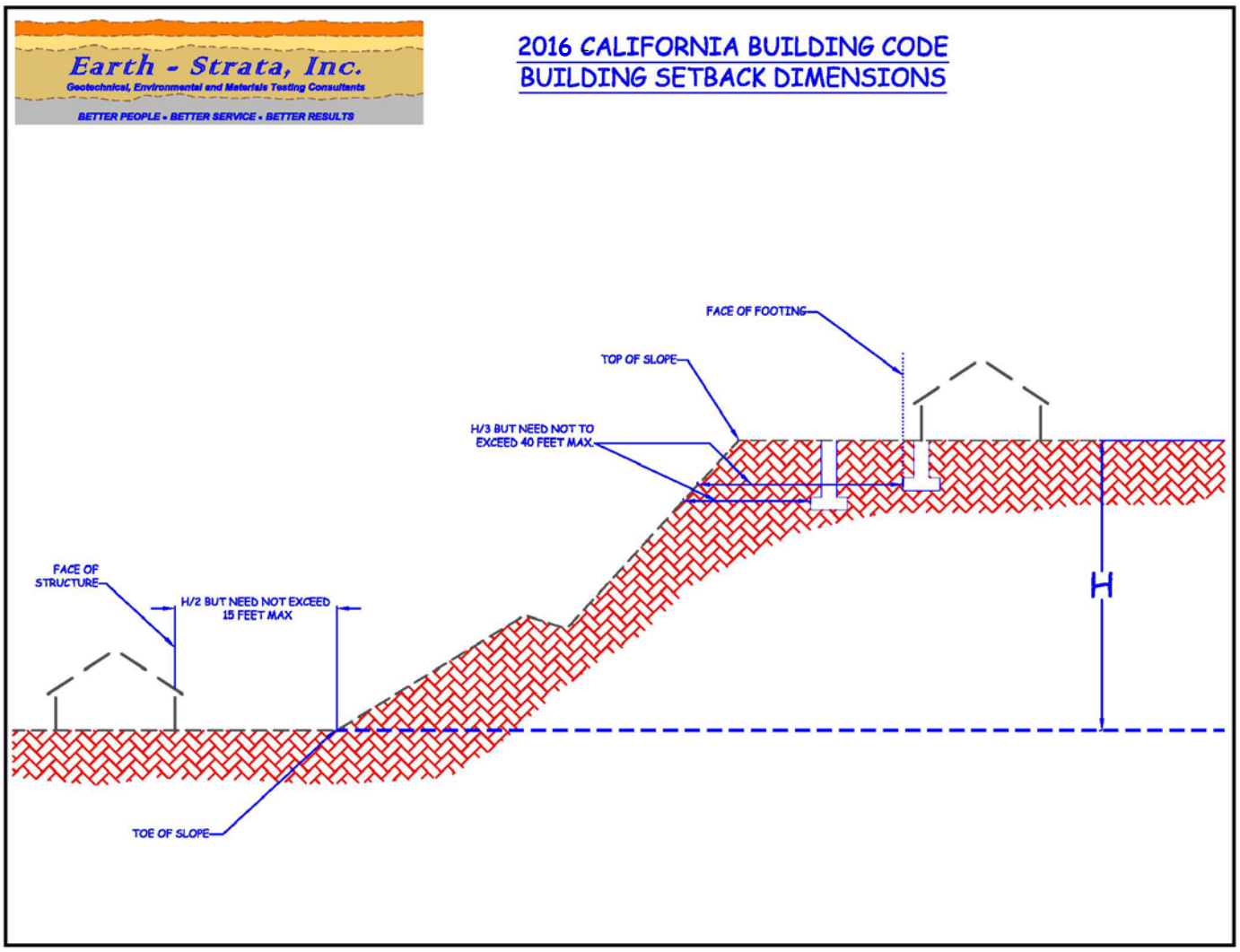
The above lateral resistance values are based on footings for an entire structure being placed directly against either compacted fill or competent alluvium.

Structural Setbacks and Building Clearance

Structural setbacks are required per the 2016 California Building Code (CBC). Additional structural setbacks are not required due to geologic or geotechnical conditions within the site. Improvements constructed in close proximity to natural or properly engineered and compacted slopes can, over time, be affected by natural processes including gravity forces, weathering, and long term secondary settlement. As a result, the CBC requires that buildings and structures be setback or footings deepened to resist the influence of these processes.

For structures that are planned near ascending and descending slopes, the footings should be embedded to satisfy the requirements presented in the CBC, Section 1808.7 as illustrated in the following Foundation Clearances from Slopes diagram.

FOUNDATION CLEARANCES FROM SLOPES



When determining the required clearance from ascending slopes with a retaining wall at the toe, the height of the slope shall be measured from the top of the wall to the top of the slope.

Foundation Observations

In accordance with the 2016 CBC and prior to the placement of forms, concrete, or steel, all foundation excavations should be observed by the geologist, engineer, or his representative to verify that they have been excavated into competent bearing materials. The excavations should be per the approved plans, moistened, cleaned of all loose materials, trimmed neat, level, and square. Any moisture softened earth materials should be removed prior to steel or concrete placement.

Earth materials from foundation excavations should not be placed in slab on grade areas unless the materials are tested for expansion potential and compacted to a minimum of 90 percent of the maximum dry density.

Expansive Soil Considerations

Preliminary laboratory test results indicate onsite earth materials exhibit an expansion potential of **LOW** as classified in accordance with 2016 CBC Section 1803.5.3 and ASTM D4829. Additional, testing for expansive soil conditions should be conducted upon completion of rough grading. The following recommendations should be considered the very minimum requirements, for the earth materials tested. It is common practice for the project architect or structural engineer to require additional slab thickness, footing sizes, and/or reinforcement.

Low Expansion Potential (Expansion Index of 21 to 50)

Our laboratory test results indicate that the earth materials onsite exhibit a **LOW** expansion potential as classified in accordance with 2016 CBC Section 1803.5.3 and ASTM D4829. Accordingly, the CBC specifies that slab on ground foundations (floor slabs) resting on earth materials with expansion indices greater than 20, require special design considerations in accordance with 2016 CBC Sections 1808.6.1 and 1808.6.2. The design procedures are based on the thickness and plasticity index of the various earth materials within the upper 15 feet of the proposed structure. For preliminary design purposes, we have assumed an effective plasticity index of 12.

Footings

- Exterior continuous footings may be founded at the minimum depths below the lowest adjacent final grade (i.e. 12-inch minimum depth for one-story, 18-inch minimum depth for two-story, and 24-inch minimum depth for three-story construction). Interior continuous footings for one-, two-, and three-story construction may be founded at a minimum depth of 12 inches below the lowest adjacent final grade. All continuous footings should have a minimum width of 12, 15, and 18 inches, for one-, two-, and three-story structures, respectively, and should be reinforced with a minimum of two (2) No. 4 bars, one (1) top and one (1) bottom.

- Exterior pad footings intended to support roof overhangs, such as second story decks, patio covers and similar construction should be a minimum of 24 inches square and founded at a minimum depth of 18 inches below the lowest adjacent final grade. The pad footings should be reinforced with a minimum of No. 4 bars spaced a maximum of 18 inches on center, each way, and should be placed near the bottom-third of the footings.

Building Floor Slabs

- The project architect or structural engineer should evaluate minimum floor slab thickness and reinforcement in accordance with 2016 CBC Section 1808.6.2 based on an assumed effective plasticity index of 12. Building floor slabs should be a minimum of 4 inches thick and reinforced with a minimum of No. 3 bars spaced a maximum of 18 inches on center, each way. All floor slab reinforcement should be supported on concrete chairs or bricks to ensure the desired placement at mid-depth.

- Interior floor slabs, within moisture sensitive areas, should be underlain by a minimum 10-mil thick moisture/vapor barrier to help reduce the upward migration of moisture from the underlying earth materials. The moisture/vapor barrier used should meet the performance

standards of an ASTM E 1745 Class A material, and be properly installed in accordance with ACI publication 318-05. It is the responsibility of the contractor to ensure that the moisture/vapor barriers are free of openings, rips, or punctures prior to placing concrete. As an option for additional moisture reduction, higher strength concrete, such as a minimum 28-day compressive strength of 5,000 pounds per square inch (psi) may be used. Ultimately, the design of the moisture/vapor barrier system and recommendations for concrete placement and curing are the purview of the foundation engineer, taking into consideration the project requirements provided by the architect and owner.

- Garage floor slabs should be a minimum of 4 inches thick and should be reinforced in a similar manner as living area floor slabs. Garage floor slabs should be placed separately from adjacent wall footings with a positive separation maintained with ⅜ inch minimum felt expansion joint materials and quartered with weakened plane joints. A 12-inch-wide turn down founded at the same depth as adjacent footings should be provided across garage entrances. The turn down should be reinforced with a minimum of two (2) No. 4 bars, one (1) top and one (1) bottom.

- The subgrade earth materials below all floor slabs should be pre-watered to achieve a moisture content that is at least equal or slightly greater than optimum moisture content, prior to placing concrete. This moisture content should penetrate a minimum depth of 12 inches into the subgrade earth materials. The pre-watering should be verified by Earth Strata Geotechnical Services during construction.

Post Tensioned Slab/Foundation Design Recommendations

In lieu of the proceeding foundation recommendations, post tensioned slabs may be used to support the proposed structures. We recommend that the foundation engineer design the foundation system using the Preliminary Post Tensioned Foundation Slab Design table below. These parameters have been provided in general accordance with Post Tensioned Design. Alternate designs addressing the effects of expansive earth materials are allowed per 2016 CBC Section 1808.6.2. When utilizing these parameters, the foundation engineer should design the foundation system in accordance with the allowable deflection criteria of applicable codes and per the requirements of the structural engineer/architect.

It should be noted that the post tensioned design methodology is partially based on the assumption that soil moisture changes around and underneath post tensioned slabs, are influenced only by climate conditions. Soil moisture change below slabs is the major factor in foundation damages relating to expansive soil. However, the design methodology has no consideration for presaturation, owner irrigation, or other non-climate related influences on the moisture content of subgrade earth materials. In recognition of these factors, we modified the geotechnical parameters determined from this methodology to account for reasonable irrigation practices and proper homeowner maintenance. Additionally, we recommend that prior to excavating footings, slab subgrades be presoaked to a depth of 12 inches and maintained at above optimum moisture until placing concrete. Furthermore, we recommend that the moisture content of the earth materials around the immediate perimeter and below the slab be presaturated to at least 1% above optimum moisture content just prior to placing concrete. The pre-watering should be verified and tested by Earth Strata Geotechnical Services during construction.

The following geotechnical parameters assume that areas adjacent to the foundations, which are planted and irrigated, will be designed with proper drainage to prevent water from ponding. Water ponding near

the foundation causes significant moisture change below the foundation. Our recommendations do not account for excessive irrigation and/or incorrect landscape design. Planters placed adjacent to the foundation, should be designed with an effective drainage system or liners, to prevent moisture infiltration below the foundation. Some lifting of the perimeter foundation beam should be expected even with properly constructed planters. Based on our experience monitoring sites with similar earth materials, elevated moisture contents below the foundation perimeter due to incorrect landscaping irrigation or maintenance, can result in uplift at the perimeter foundation relative to the central portion of the slab.

Future owners should be informed and educated of the importance in maintaining a consistent level of moisture within the earth materials around the structures. Future owners should also be informed of the potential negative consequences of either excessive watering, or allowing expansive earth materials to become too dry. Earth materials will shrink as they dry, followed by swelling during the rainy winter season, or when irrigation is resumed. This will cause distress to site improvements and structures.

Preliminary Post Tensioned Foundation Slab Design

PARAMETER		VALUE
Expansion Index		Low[1]
Percent Finer than 0.002 mm in the Fraction Passing the No. 200 Sieve		< 20 percent (assumed)
Type of Clay Mineral		Montmorillonite (assumed)
Thornthwaite Moisture Index		+20
Depth to Constant Soil Suction		7 feet
Constant Soil Suction		P.F. 3.6
Moisture Velocity		0.7 inches/month
Center Lift	Edge moisture variation distance, e_m Center lift, y_m	5.5 feet 2.0 inches
Edge Lift	Edge moisture variation distance, e_m Edge lift, y_m	3.0 feet 0.8 inches
Soluble Sulfate Content for Design of Concrete Mixtures in Contact with Earth Materials		Negligible
Modulus of Subgrade Reaction, k (assuming presaturation as indicated below)		200 pci
Minimum Perimeter Foundation Embedment		18
Perimeter Foundation Reinforcement		--
Under Slab Moisture/Vapor Barrier and Sand Layer		10-mil thick moisture/vapor barrier meeting the requirements of a ASTM E 1745 Class A material

1. Obtained by laboratory testing.
2. Recommendations for foundation reinforcement are ultimately the purview of the foundation/structural engineer based upon the geotechnical criteria presented in this report, and structural engineering considerations.

Corrosivity

Corrosion is defined by the National Association of Corrosion Engineers (NACE) as "a deterioration of a substance or its properties because of a reaction with its environment." From a geotechnical viewpoint, the "substances" are the reinforced concrete foundations or buried metallic elements (not surrounded by concrete) and the "environment" is the prevailing earth materials in contact with them. Many factors can contribute to corrosivity, including the presence of chlorides, sulfates, salts, organic materials, different

oxygen levels, poor drainage, different soil types, and moisture content. It is not considered practical or realistic to test for all of the factors which may contribute to corrosivity.

The potential for concrete exposure to chlorides is based upon the recognized Caltrans reference standard "Bridge Design Specifications", under Subsection 8.22.1 of that document, Caltrans has determined that "Corrosive water or soil contains more than 500 parts per million (ppm) of chlorides". Based on limited preliminary laboratory testing, the onsite earth materials have chloride contents *less* than 500 ppm. As such, specific requirements resulting from elevated chloride contents are not required.

Specific guidelines for concrete mix design are provided in 2016 CBC Section 1904.1 and ACI 318, Section 4.3 Table 4.3.1 when the soluble sulfate content of earth materials exceeds 0.1 percent by weight. Based on limited preliminary laboratory testing, the onsite earth materials are classified in accordance with Table 4.3.1 as having a *negligible* sulfate exposure condition. Therefore, structural concrete in contact with onsite earth materials should utilize Type I or II.

Based on our laboratory testing of resistivity, the onsite earth materials in contact with buried steel should be considered *mildly corrosive*. Additionally, pH values below 9.7 are recognized as being corrosive to most common metallic components including, copper, steel, iron, and aluminum. The pH values for the earth materials tested were *lower* than 9.7. Therefore, any steel or metallic materials that are exposed to the earth materials should be encased in concrete or other measures should be taken to provide corrosion protection.

If building slabs are to be post tensioned, the post tensioning cables should be encased in concrete and/or encapsulated in accordance with the Post Tensioning Institute Guide Specifications. Post tensioning cable end plate anchors and nuts also need to be protected if exposed. If the anchor plates and nuts are in a recess in the edge of the concrete slab, the recess should be filled in with a non-shrink, non-porous, moisture-insensitive epoxy grout so that the anchorage assembly and the end of the cable are completely encased and isolated from the soil. A standard non-shrink, non-metallic cementitious grout may be used only when the post tension anchoring assembly is polyethylene encapsulated similar to that offered by Hayes Industries, LTD or O'Strand, Inc.

The preliminary test results for corrosivity are based on limited samples, and the initiation of grading may blend various earth materials together. This blending or imported material could alter and increase the detrimental properties of the onsite earth materials. Accordingly, additional testing for chlorides and sulfates along with testing for pH and resistivity should be performed upon completion of grading. Laboratory test results are presented in Appendix C.

RETAINING WALLS

Active and At-Rest Earth Pressures

Foundations may be designed in accordance with the recommendations provided in the Tentative Foundation Design Recommendation section of this report. The following table provides the minimum recommended equivalent fluid pressures for design of retaining walls a maximum of 8 feet high. The active earth pressure should be used for design of unrestrained retaining walls, which are free to tilt slightly. The at-rest earth pressure should be used for design of retaining walls that are restrained at the top, such as basement walls, curved walls with no joints, or walls restrained at corners. For curved walls, active

pressure may be used if tilting is acceptable and construction joints are provided at each angle point and at a minimum of 15 foot intervals along the curved segments.

MINIMUM STATIC EQUIVALENT FLUID PRESSURES (pcf)		
PRESSURE TYPE	BACKSLOPE CONDITION	
	LEVEL	2:1 (h:v)
Active Earth Pressure	40	63
At-Rest Earth Pressure	60	95

The retaining wall parameters provided do not account for hydrostatic pressure behind the retaining walls. Therefore, the subdrain system is a very important part of the design. All retaining walls should be designed to resist surcharge loads imposed by other nearby walls, structures, or vehicles should be added to the above earth pressures, if the additional loads are being applied within a 1.5:1 (h:v) plane projected up from the heel of the retaining wall footing. As a way of minimizing surcharge loads and the settlement potential of nearby buildings, the footings for the building can be deepened below the 1.5:1 (h:v)plane projected up from the heel of the retaining wall footing.

Upon request and under a separate scope of work, more detailed analyses can be performed to address equivalent fluid pressures with regard to stepped retaining walls, actual retaining wall heights, actual backfill inclinations, specific backfill materials, higher retaining walls requiring earthquake design motions, etc.

Subdrain System

We recommend a perforated pipe and gravel subdrain system be provided behind all proposed retaining walls to prevent the buildup of hydrostatic pressure behind the proposed retaining walls. The perforated pipe should consist of 4-inch minimum diameter Schedule 40 PVC or ABS SDR-35, placed with the perforations facing down. The pipe should be surrounded by 1 cubic foot per foot of ¾- or 1½ inch open graded gravel wrapped in filter fabric. The filter fabric should consist of Mirafi 140N or equivalent to prevent infiltration of fines and subsequent clogging of the subdrain system.

In lieu of a perforated pipe and gravel subdrain system, weep holes or open vertical masonry joints may be provided in the lowest row of block exposed to the air to prevent the buildup of hydrostatic pressure behind the proposed retaining walls. Weep holes should be a minimum of 3 inches in diameter and provided at intervals of 6 feet along the wall. Open vertical masonry joints should be provided at a minimum of 32 inch intervals. A continuous gravel fill, a minimum of 1 cubic foot per foot, should be placed behind the weep holes or open masonry joints. The gravel should be wrapped in filter fabric consisting of Mirafi 140N or equivalent.

The retaining walls should be adequately coated on the backfilled side of the walls with a proven waterproofing compound by an experienced professional to inhibit infiltration of moisture through the walls.

Temporary Excavations

All excavations should be made in accordance with Cal-OSHA requirements. Earth Strata Geotechnical Services is not responsible for job site safety.

Retaining Wall Backfill

Retaining wall backfill materials should be approved by the geotechnical engineer or his representative prior to placement as compacted fill. Retaining wall backfill should be placed in lifts no greater than 6 to 8 inches, watered or air dried as necessary to achieve near optimum moisture contents. All retaining wall backfill should be compacted to a minimum of 90 percent of the maximum dry density as determined by ASTM D 1557. Retaining wall backfill should be capped with a paved surface drain.

CONCRETE FLATWORK

Thickness and Joint Spacing

Concrete sidewalks and patio type slabs should be at least 4 inches thick and provided with construction or expansion joints every 6 feet or less, to reduce the potential for excessive cracking. Concrete driveway slabs should be at least 5 inches thick and provided with construction or expansion joints every 10 feet or less.

Subgrade Preparation

In order to reduce the potential for unsightly cracking, subgrade earth materials underlying concrete flatwork should be compacted at near optimum moisture to a minimum of 90 percent of the maximum dry density determined by ASTM D 1557 and then moistened to at least optimum or slightly above optimum moisture content. This moisture should extend to a depth of 12 inches below subgrade and be maintained prior to placement of concrete. Pre-watering of the earth materials prior to placing concrete will promote uniform curing of the concrete and minimize the development of shrinkage cracks. The project geotechnical engineer or his representative should verify the density and moisture content of the earth materials and the depth of moisture penetration prior to placing concrete.

Cracking within concrete flatwork is often a result of factors such as the use of too high a water to cement ratio and/or inadequate steps taken to prevent moisture loss during the curing of the concrete. Concrete distress can be reduced by proper concrete mix design and proper placement and curing of the concrete. Minor cracking within concrete flatwork is normal and should be expected.

PRELIMINARY ASPHALTIC CONCRETE PAVEMENT DESIGN

Laboratory testing of representative earth materials indicate an R-value of 12 may be used for preliminary pavement design. The following table includes our minimum recommended asphaltic concrete pavement sections calculated in accordance with the State of California design procedures using assumed Traffic Indices. Final pavement design should be based on sampling and testing of post grading conditions. Alternative pavement sections and calculation sheets have been provided within the appendices of this report.

PRELIMINARY ASPHALTIC CONCRETE PAVEMENT DESIGN			
PARAMETERS	**AUTO PARKING**	**AUTO DRIVES**	**RESIDENTIAL COLLECTOR STREETS/ENTRANCES/TRUCK DRIVES**
Assumed Traffic Index	5.0	6.0	7.0
Design R-Value	12	12	12
AC Thickness (inches)	3.0	3.5	4.0
AB Thickness (inches)	8.5	10.75	13.75

Notes: AC – Asphaltic Concrete
AB – Aggregate Base

The subgrade earth materials immediately below the aggregate base (base) should be compacted to a minimum of 95 percent of the maximum dry density determined by ASTM D 1557 to a minimum depth of 12 inches. Base materials should be compacted to a minimum of 95 percent of the maximum dry density determined by ASTM D 1557.

Base materials should consist of Class 2 aggregate base conforming to Section 26-1.02B of the State of California Standard Specifications or crushed aggregate base conforming to Section 200-2 of the Standard Specifications for Public Works Construction (Greenbook). Base materials should be compacted at or slightly below optimum moisture content. Asphaltic concrete materials and construction operations should conform to Section 203 of the Greenbook.

GRADING PLAN REVIEW AND CONSTRUCTION SERVICES

This report has been prepared for the exclusive use of **Mike Naggar & Associates** and their authorized representative. It likely does not contain sufficient information for other parties or other uses. Earth Strata Geotechnical Services should be engaged to review the final design plans and specifications prior to construction. This is to verify that the recommendations contained in this report have been properly incorporated into the project plans and specifications. Should Earth Strata Geotechnical Services not be accorded the opportunity to review the project plans and specifications, we are not responsibility for misinterpretation of our recommendations.

We recommend that Earth Strata Geotechnical Services be retained to provide geologic and geotechnical engineering services during grading and foundation excavation phases of the work. In order to allow for design changes in the event that the subsurface conditions differ from those anticipated prior to construction.

Earth Strata Geotechnical Services should review any changes in the project and modify and approve in writing the conclusions and recommendations of this report. This report and the drawings contained within are intended for design input purposes only and are not intended to act as construction drawings or specifications. In the event that conditions encountered during grading or construction operations appear to be different than those indicated in this report, this office should be notified immediately, as revisions may be required.

REPORT LIMITATIONS

Our services were performed using the degree of care and skill ordinarily exercised, under similar circumstances, by reputable soils engineers and geologists, practicing at the time and location this report was prepared. No other warranty, expressed or implied, is made as to the conclusions and professional advice included in this report.

Earth materials vary in type, strength, and other geotechnical properties between points of observation and exploration. Groundwater and moisture conditions can also vary due to natural processes or the works of man on this or adjacent properties. As a result, we do not and cannot have complete knowledge of the subsurface conditions beneath the subject property. No practical study can completely eliminate uncertainty with regard to the anticipated geotechnical conditions in connection with a subject property. The conclusions and recommendations within this report are based upon the findings at the points of observation and are subject to confirmation by Earth Strata Geotechnical Services based on the conditions revealed during grading and construction.

This report was prepared with the understanding that it is the responsibility of the owner or their representative, to ensure that the conclusions and recommendations contained herein are brought to the attention of the other project consultants and are incorporated into the plans and specifications. The owners' contractor should properly implement the conclusions and recommendations during grading and construction, and notify the owner if they consider any of the recommendations presented herein to be unsafe or unsuitable.

APPENDIX A

REFERENCES

APPENDIX A

References

California Building Standards Commission, 2016, *2016 California Building Code, California Code of Regulations Title 24, Part 2, Volume 2 of 2,* Based on 2012 International Building Code.

DeLorme, 2004, (www.delorme.com) *Topo USA*®.

Hart, Earl W. and Bryant, William A., *1997, Fault Rupture Hazard Zones in California, CDMG Special Publication 42,* revised 2003.

Irvine Geotechnical, 2001, Mult Calc 2000, October 10.

Morton, D.M. and Miller, F.K., , 2006, *Geologic Map of the San Bernardino and Santa Ana 30' x 60' Quadrangles, California*: U.S. Geological Survey, Open-File Report OF-2006-1217.

National Association of Corrosion Engineers, 1984, *Corrosion Basics An Introduction*, page 191.

Southern California Earthquake Center (SCEC), 1999, *Recommended Procedures for Implementation of DMG Special Publication 117, Guidelines for Analyzing and Mitigating Liquefaction Hazards in California,* March.

APPENDIX B

EXPLORATORY LOGS

Geotechnical Boring Log B-1

Date: May 4, 2018	**Project Name: MR-DC** **Page: 1 of 1**
Project Number: 182161-10A	**Logged By: SNJ**
Drilling Company: Drilling It	**Type of Rig: B-61**
Drive Weight (lbs): 140	**Drop (in): 30** **Hole Diameter (in): 8**
Top of Hole Elevation (ft): See Map	**Hole Location: See Geotechnical Map**

Depth (ft)	Blow Count Per Foot	Sample Depth	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
0		0-5'				**Quaternary Old Fan Deposits (Qof)**
					SC	Clayey SAND; reddish brown, slightly moist, dense, fine to coarse sand
	40	2.5'	127.1	12.6		
						Clay nodules below 4 feet
5	31	5'	113.8	10.6		Fine to medium sand below 5 feet
	50	7.5'	121.4	10.8		
10	56	10'	122.0	12.7		Very dense below 10 feet
	55	12.5'	116.0	10.6	SP-SC	Poorly-Graded SAND with Clay; yellowish brown, slightly moist, very dense,
						medium to coarse sand
						Total Depth: 14 feet
15						No Groundwater
20						
25						
30						

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Geotechnical Boring Log B-2

Date: May 4, 2018	**Project Name: MR-DC** **Page: 1 of 1**
Project Number: 182161-10A	**Logged By: SNJ**
Drilling Company: Drilling It	**Type of Rig: B-61**
Drive Weight (lbs): 140	**Drop (in): 30** **Hole Diameter (in): 8**
Top of Hole Elevation (ft): See Map	**Hole Location: See Geotechnical Map**

Depth (ft)	Blow Count Per Foot	Sample Depth	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
0		0-5'				**Quaternary Old Fan Deposits (Qof)**
					SC	Clayey SAND; brown, slightly moist, dense, fine to coarse sand
	40	2.5'	115.6	12.6		
5	99/10"	5'	119.2	10.4	SM	Silty SAND; reddish brown, slightly moist, very dense, fine to coarse sand
	34	7.5'	104.3	11.3		Dense, fine to medium sand below 7.5 feet
10	49	10'	122.0	10.1		
15	32	15'	100.0	10.9		
						Total Depth: 16.5 feet
						No Groundwater
20						
25						
30						

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Geotechnical Boring Log B-3

Date: May 4, 2018	**Project Name: MR-DC** **Page: 1 of 1**
Project Number: 182161-10A	**Logged By: SNJ**
Drilling Company: Drilling It	**Type of Rig: B-61**
Drive Weight (lbs): 140	**Drop (in): 30** **Hole Diameter (in): 8**
Top of Hole Elevation (ft): See Map	**Hole Location: See Geotechnical Map**

Depth (ft)	Blow Count Per Foot	Sample Depth	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
0						**Quaternary Old Fan Deposits (Qof)**
					SM	Silty SAND; grayish brown, dry, medium dense, fine to coarse sand
	50/6"	2.5'	127.7	6.9	SC	Clayey SAND; reddish brown, slightly moist, very dense, fine to coarse sand
5	50/5"	5'	128.0	9.3		
	45	7.5'	110.9	9.3		
10	62	10'	124.1	10.1		
15	66	15'	103.2	19.2	ML	Sandy SILT; reddish brown, slightly moist, stiff, fine to medium sand
						Total Depth: 16.5 feet
						No Groundwater
20						
25						
30						

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Geotechnical Boring Log B-4

Date: May 4, 2018	**Project Name: MR-DC** **Page: 1 of 1**
Project Number: 182161-10A	**Logged By: SNJ**
Drilling Company: Drilling It	**Type of Rig: B-61**
Drive Weight (lbs): 140	**Drop (in): 30** **Hole Diameter (in): 8**
Top of Hole Elevation (ft): See Map	**Hole Location: See Geotechnical Map**

Depth (ft)	Blow Count Per Foot	Sample Depth	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
0						**Quaternary Old Fan Deposits (Qof)**
					SC	Clayey SAND; reddish brown, slightly moist, medium dense, fine to coarse sand
	12	2.5'	107.7	7.0		
5	40	5'	105.5	15.1		Dense below 5 feet
	43	7.5'	121.2	8.4		Fine to medium sand below 7.5 feet
10	55	10'	115.7	17.1		Very dense, fine to coarse sand below 10 feet
	37	12.5'	112.7	11.8		Dense below 12.5 feet
15						Total Depth: 14 feet
						No Groundwater
20						
25						
30						

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Geotechnical Boring Log B-5

Date: May 4, 2018	**Project Name: MR-DC** **Page: 1 of 1**
Project Number: 182161-10A	**Logged By: SNJ**
Drilling Company: Drilling It	**Type of Rig: B-61**
Drive Weight (lbs): 140	**Drop (in): 30** **Hole Diameter (in): 8**
Top of Hole Elevation (ft): See Map	**Hole Location: See Geotechnical Map**

Depth (ft)	Blow Count Per Foot	Sample Depth	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
0						**Quaternary Old Fan Deposits (Qof)**
					SM	Silty SAND; medium brown, dry, medium dense, fine to medium sand
	17	2.5'	108.6	3.2		
5	33	5'	113.4	10.5	SC	Clayey SAND; reddish brown, slightly moist, dense, fine to coarse sand
	60	7.5'	117.5	7.8		
10	75	10'	121.5	9.9	SP-SC	Poorly-Graded SAND with Clay; yellowish brown, slightly moist, very dense, fine to coarse sand
	67	12.5'	125.2	6.6		
15						Total Depth: 14 feet
						No Groundwater
20						
25						
30						

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Geotechnical Boring Log B-6

Date: May 15, 2018	**Project Name: MR-DC** **Page: 1 of 1**
Project Number: 182161-10A	**Logged By: JF**
Drilling Company: Drilling It	**Type of Rig: B-61**
Drive Weight (lbs): 140	**Drop (in): 30** **Hole Diameter (in): 8**
Top of Hole Elevation (ft): See Map	**Hole Location: See Geotechnical Map**

Depth (ft)	Blow Count Per Foot	Sample Depth	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
0						**Quaternary Old Fan Deposits (Qof)**
					SC	Clayey SAND; brown, slightly moist, dense, fine to coarse sand
	48	2.5'	109.8	11.3		
5	76	5'	130.6	7.9		Very dense below 5 feet
	54	7.5'	117.7	10.7		
10	79	10'	119.5	9.6	SM	Silty SAND; reddish brown, dry, very dense, fine to coarse sand, trace clay
15	69	15'	120.0	7.8		Fine to medium sand below 15 feet
						Total Depth: 16.5 feet
						No Groundwater
20						
25						
30						

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Geotechnical Boring Log B-7

Date: May 15, 2018	**Project Name: MR-DC** **Page: 1 of 1**
Project Number: 182161-10A	**Logged By: JF**
Drilling Company: Drilling It	**Type of Rig: B-61**
Drive Weight (lbs): 140	**Drop (in): 30** **Hole Diameter (in): 8**
Top of Hole Elevation (ft): See Map	**Hole Location: See Geotechnical Map**

Depth (ft)	Blow Count Per Foot	Sample Depth	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
0						**Quaternary Old Fan Deposits (Qof)**
					SM	Silty SAND; brown, dry, dense dense, fine to coarse sand, trace clay
	50/4"	2.5'	92.7	4.0		
5	70/11"	5'	125.2	12.0		
	33	7.5'	125.6	7.3	SC	Clayey SAND; reddish brown, slightly moist, very dense, fine to coarse sand
10	72	10'	128.3	11.3		
15	45	15'	113.8	7.5		Dense below 15 feet
						Total Depth: 16.5 feet
						No Groundwater
20						
25						
30						

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Geotechnical Boring Log B-8

Date: May 15, 2018	**Project Name: MR-DC** **Page: 1 of 1**
Project Number: 182161-10A	**Logged By: JF**
Drilling Company: Drilling It	**Type of Rig: B-61**
Drive Weight (lbs): 140	**Drop (in): 30** **Hole Diameter (in): 8**
Top of Hole Elevation (ft): See Map	**Hole Location: See Geotechnical Map**

Depth (ft)	Blow Count Per Foot	Sample Depth	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
0						**Quaternary Old Fan Deposits (Qof)**
					SM	Silty SAND; reddish brown, slightly moist, very dense, fine to medium sand,
	91/11"	2.5'	107.4	8.8		trace clay
5	52	5'	118.8	11.2		
	68	7.5'	111.0	16.1		
10	76	10'	109.7	16.1		Strong brown, moist, below 10 feet
15	81/11"	15'	108.2	13.8		
						Total Depth: 16.5 feet
						No Groundwater
20						
25						
30						

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Geotechnical Boring Log B-9

Date: May 15, 2018	**Project Name: MR-DC** **Page: 1 of 1**
Project Number: 182161-10A	**Logged By: JF**
Drilling Company: Drilling It	**Type of Rig: B-61**
Drive Weight (lbs): 140	**Drop (in): 30** **Hole Diameter (in): 8**
Top of Hole Elevation (ft): See Map	**Hole Location: See Geotechnical Map**

Depth (ft)	Blow Count Per Foot	Sample Depth	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
0						**Quaternary Old Fan Deposits (Qof)**
					SM	Silty SAND; strong brown, dry, very dense, fine to medium sand
	50/4"	2.5'	114.0	5.1		
5	51	5'	119.4	7.4	ML	Sandy SILT; reddish brown, dry, stiff, fine to medium sand
	81/11"	7.5'	123.7	13.2		
10	64	10'	92.8	26.6		
15	60	15'	96.5	27.4		Strong brown below 15 feet
						Total Depth: 16.5 feet
						No Groundwater
20						
25						
30						

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Geotechnical Boring Log B-10

Date: May 18, 2018	**Project Name: MR-DC** **Page: 1 of 1**
Project Number: 182161-10A	**Logged By: JF**
Drilling Company: Drilling It	**Type of Rig: B-61**
Drive Weight (lbs): 140	**Drop (in): 30** **Hole Diameter (in): 8**
Top of Hole Elevation (ft): See Map	**Hole Location: See Geotechnical Map**

Depth (ft)	Blow Count Per Foot	Sample Depth	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
0						**Quaternary Old Alluvial Deposits (Qof)**
					SM	Silty SAND; reddish brown, dry, very dense, fine to medium sand, trace clay
	70/5"	2.5'	122.9	7.3		
5	70/5"	5'	107.6	10.6		
	70/5"	7.5'	110.9	10.1		
10	67/6"	10'	101.3	13.4		
						Total Depth: 11.5 feet
						No Groundwater
15						
20						
25						
30						

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Geotechnical Boring Log B-11

Date: May 18, 2018	**Project Name: MR-DC** **Page: 1 of 1**
Project Number: 182161-10A	**Logged By: JF**
Drilling Company: Drilling It	**Type of Rig: Simco 2800**
Drive Weight (lbs): 140	**Drop (in): 30** **Hole Diameter (in): 8**
Top of Hole Elevation (ft): See Map	**Hole Location: See Geotechnical Map**

Depth (ft)	Blow Count Per Foot	Sample Depth	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
0						**Quaternary Old Alluvial Fan Deosits (Qof):**
					SC	Clayey SAND; strong brown, moist, very dense, fine to medium sand
	88	2.5'	122.3	9.5		
5						
	99	5'	126.7	11.9	SC	Clayey SAND; strong brown, slightly moist, very dense, fine to coase sand
	70/4"	7.5'	90.1	14.1		
10						
	70/5"	10'	105.5	17.2		
						Total Depth: 11 feet
						No Groundwater
15						
20						
25						
30						

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Geotechnical Boring Log B-12

Date: May 18, 2018	**Project Name: MR-DC** **Page: 1 of 1**
Project Number: 182161-10A	**Logged By: JF**
Drilling Company: Drilling It	**Type of Rig: Simco 2800**
Drive Weight (lbs): 140	**Drop (in): 30** **Hole Diameter (in): 8**
Top of Hole Elevation (ft): See Map	**Hole Location: See Geotechnical Map**

Depth (ft)	Blow Count Per Foot	Sample Depth	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
0						**Quarternary Old Alluvial Fan Deposits (Qof):**
					SM	Silty SAND; reddish brown, dry, very dense, fine to medium sand with trace clay
	70/4"	2.5'	119.9	9.2		
5	90	5'	125.4	12.5		
	70/4"	7.5'	116.9	11.1		
						Total Depth: 8 feet
10						No Groundwater
15						
20						
25						
30						

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APPENDIX C

LABORATORY PROCEDURES AND TEST RESULTS

APPENDIX C

Laboratory Procedures and Test Results

Laboratory testing provided quantitative and qualitative data involving the relevant engineering properties of the representative earth materials selected for testing. The representative samples were tested in general accordance with American Society for Testing and Materials (ASTM) procedures and/or California Test Methods (CTM).

Soil Classification: Earth materials encountered during exploration were classified and logged in general accordance with the Standard Practice for Description and Identification of Soils (Visual-Manual Procedure) of ASTM D 2488. Upon completion of laboratory testing, exploratory logs and sample descriptions were reconciled to reflect laboratory test results with regard to ASTM D 2487.

Moisture and Density Tests: For select samples moisture content was determined using the guidelines of ASTM D 2216 and dry density determinations were made using the guidelines of ASTM D 2937. These tests were performed on relatively undisturbed samples and the test results are presented on the exploratory logs.

Maximum Density Tests: The maximum dry density and optimum moisture content of representative samples were determined using the guidelines of ASTM D 1557. The test results are presented in the table below.

SAMPLE LOCATION	MATERIAL DESCRIPTION	MAXIMUM DRY DENSITY (pcf)	OPTIMUM MOISTURE CONTENT (%)
B-2 @ 0-5 feet	Silty SAND	126.0	10.0

Expansion Index: The expansion potential of representative samples was evaluated using the guidelines of ASTM D 4829. The test results are presented in the table below.

SAMPLE LOCATION	MATERIAL DESCRIPTION	EXPANSION INDEX	EXPANSION POTENTIAL
B-2 @ 0-5 feet	Silty SAND	22	Low

R-Value: The R-value of representative samples was determined using the guidelines of CTM 301. The test results are presented in the table below.

SAMPLE LOCATION	MATERIAL DESCRIPTION	R-VALUE
B-1 @ 0-5 feet	Clayey SAND	12

Minimum Resistivity and pH Tests: Minimum resistivity and pH Tests of select samples were performed using the guidelines of CTM 643. The test results are presented in the table below.

SAMPLE LOCATION	MATERIAL DESCRIPTION	pH	MINIMUM RESISTIVITY (ohm-cm)
B-2 @ 0-5 feet	Silty SAND	7.3	2,300

Soluble Sulfate: The soluble sulfate content of select samples was determined using the guidelines of CTM 417. The test results are presented in the table below.

SAMPLE LOCATION	MATERIAL DESCRIPTION	SULFATE CONTENT (% by weight)	SULFATE EXPOSURE
B-2 @ 0-5 feet	Silty SAND	0.014	Negligible

Chloride Content: Chloride content of select samples was determined using the guidelines of CTM 422. The test results are presented in the table below.

SAMPLE LOCATION	MATERIAL DESCRIPTION	CHLORIDE CONTENT (ppm)
B-2 @ 0-5 feet	Silty SAND	100

APPENDIX D

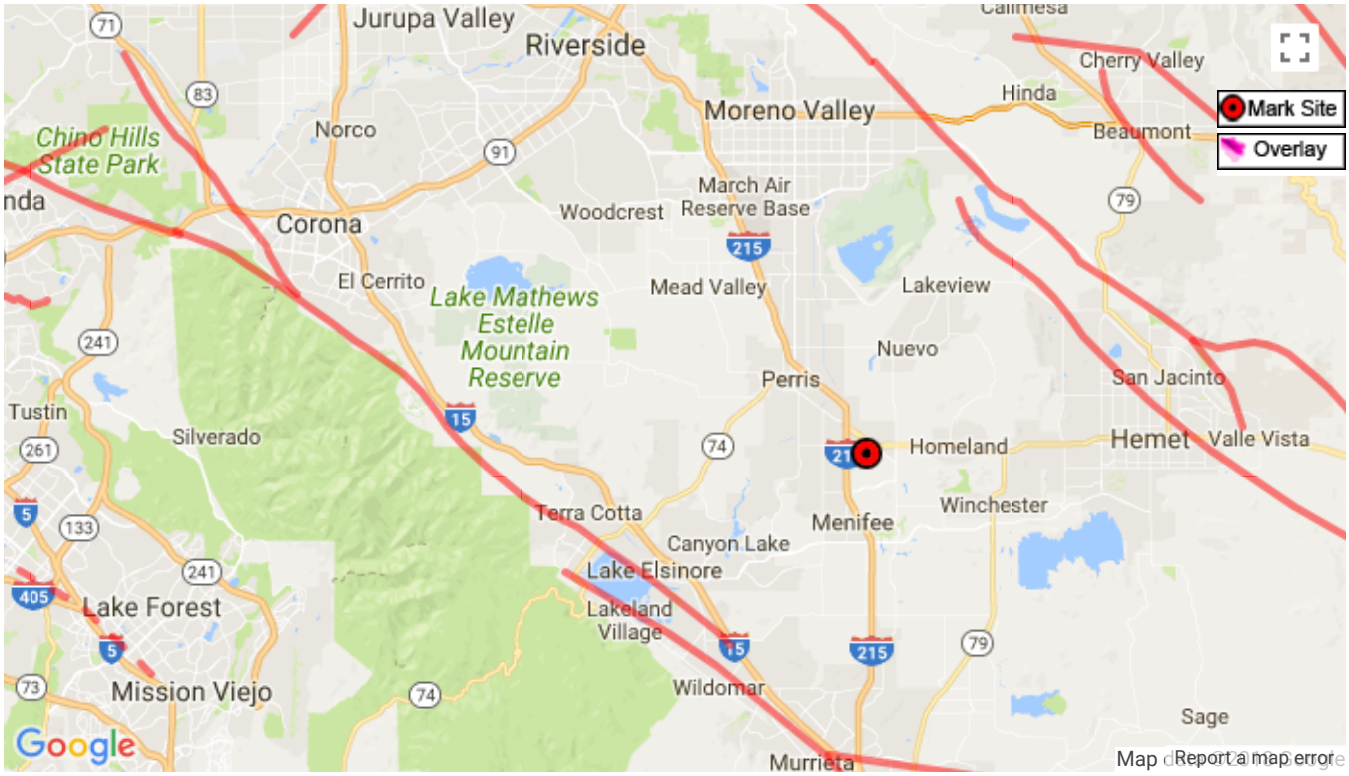
SEISMICITY

CALIFORNIA DEPARTMENT OF
TRANSPORTATION

Caltrans ARS Online (v2.3.09)

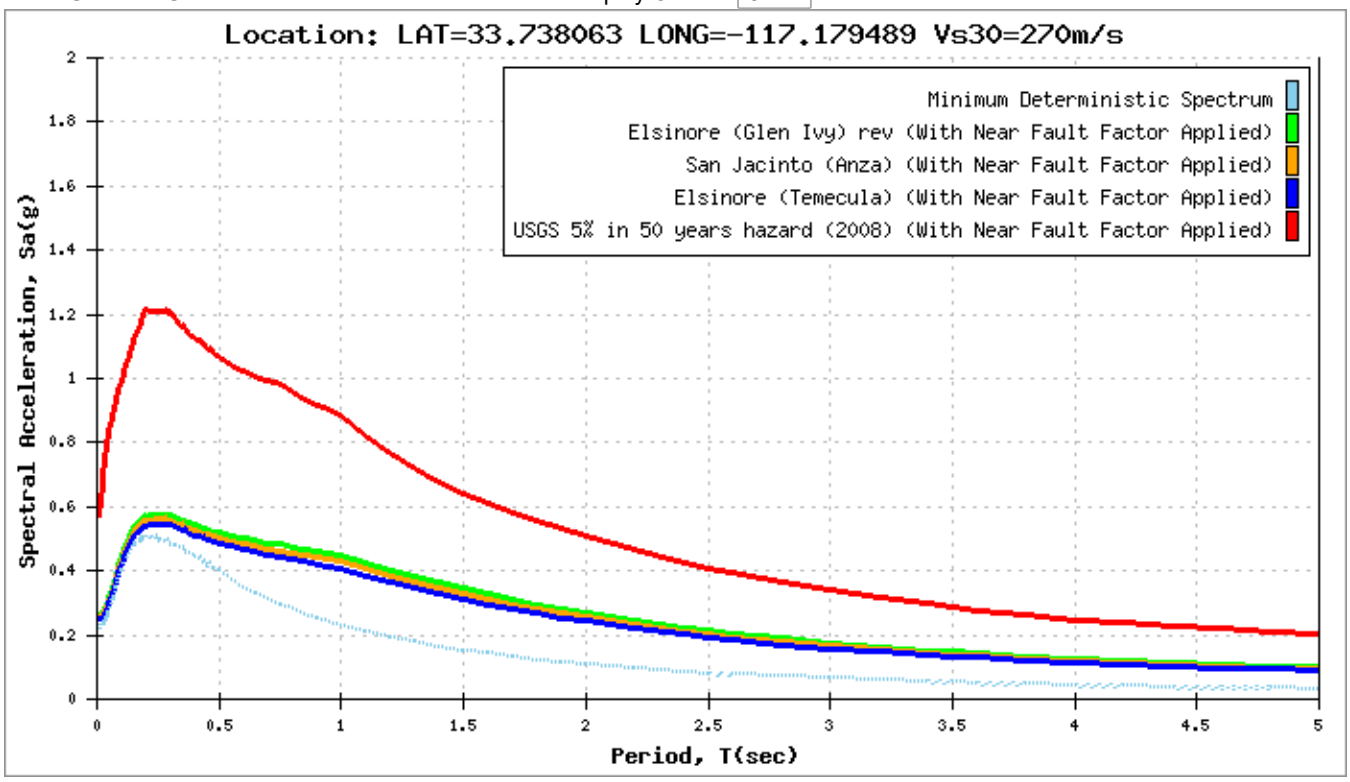
This web-based tool calculates both deterministic and probabilistic acceleration response spectra for any location in California based on criteria provided in *Appendix B of Caltrans Seismic Design Criteria*. More...

SELECT SITE LOCATION



Latitude: 33.738063 **Longitude:** -117.179489 ***V*S30:** 270 m/s Calculate

CALCULATED SPECTRA Display Curves: 3



Tabular Data | Envelope Only | Hide Near Fault | Axis Scale | Show Basin

Apply Near Fault Adjustment To:
NOTE: Caltrans SDC requires application of a Near Fault Adjustment factor for sites less than 25 km (Rrup) from the causative fault.

☑ Deterministic Spectrum Using

15.21 Km Elsinore (Glen Ivy) rev
16.05 Km San Jacinto (Anza)
16.93 Km Elsinore (Temecula)

☑ Probabilistic Spectrum Using

15.21 Km (Recommend Performing Deaggregation To Verify)

◉ Show Spectrum with Adjustment Only
○ Show Spectrum with and without near fault Adjustment

OK

U.S. Geological Survey - Earthquake Hazards Program

2008 National Seismic Hazard Maps - Source Parameters

New Search

Distance in Kilometers	Name	State	Pref Slip Rate (mm/yr)	Dip (degrees)	Dip Dir	Slip Sense	Rupture Top (km)	Rupture Bottom (km)	Length (km)
15.23	Elsinore;W+GI	CA	n/a	81	NE	strike slip	0	14	83
15.23	Elsinore;GI	CA	5	90	V	strike slip	0	13	37
16.42	San Jacinto;A+C	CA	n/a	90	V	strike slip	0	17	118
16.42	San Jacinto;A	CA	9	90	V	strike slip	0	17	71
16.42	San Jacinto;A+CC+B+SM	CA	n/a	90	V	strike slip	0.1	15	178
16.42	San Jacinto;A+CC+B	CA	n/a	90	V	strike slip	0.1	15	152
16.42	San Jacinto;A+CC	CA	n/a	90	V	strike slip	0	16	118
16.68	Elsinore;GI+T+J	CA	n/a	86	NE	strike slip	0	17	153
16.68	Elsinore;GI+T+J+CM	CA	n/a	86	NE	strike slip	0	16	195
16.68	Elsinore;GI+T	CA	5	90	V	strike slip	0	14	78
16.68	Elsinore;W+GI+T+J+CM	CA	n/a	84	NE	strike slip	0	16	241
16.68	Elsinore;W+GI+T+J	CA	n/a	84	NE	strike slip	0	16	199
16.68	Elsinore;W+GI+T	CA	n/a	84	NE	strike slip	0	14	124
16.93	Elsinore;T+J+CM	CA	n/a	85	NE	strike slip	0	16	169
16.93	Elsinore;T	CA	5	90	V	strike slip	0	14	52
16.93	Elsinore;T+J	CA	n/a	86	NE	strike slip	0	17	127
18.35	San Jacinto;SBV+SJV+A	CA	n/a	90	V	strike slip	0	16	134
18.35	San Jacinto;SJV+A+CC+B+SM	CA	n/a	90	V	strike	0.1	15	196

						slip			
18.35	San Jacinto;SJV+A+CC+B	CA	n/a	90	V	strike slip	0.1	15	170
18.35	San Jacinto;SJV+A+CC	CA	n/a	90	V	strike slip	0	16	136
18.35	San Jacinto;SJV+A	CA	n/a	90	V	strike slip	0	17	89
18.35	San Jacinto;SBV+SJV+A+CC+B+SM	CA	n/a	90	V	strike slip	0.1	15	241
18.35	San Jacinto;SBV+SJV+A+CC+B	CA	n/a	90	V	strike slip	0.1	15	215
18.35	San Jacinto;SBV+SJV+A+CC	CA	n/a	90	V	strike slip	0	16	181
18.35	San Jacinto;SBV+SJV+A+C	CA	n/a	90	V	strike slip	0	17	181
18.35	San Jacinto;SJV+A+C	CA	n/a	90	V	strike slip	0	17	136
19.40	San Jacinto;SBV+SJV	CA	n/a	90	V	strike slip	0	16	88
19.40	San Jacinto;SJV	CA	18	90	V	strike slip	0	16	43
31.42	San Jacinto;SBV	CA	6	90	V	strike slip	0	16	45
37.10	Chino, alt 2	CA	1	65	SW	strike slip	0	14	29
39.42	Elsinore;W	CA	2.5	75	NE	strike slip	0	14	46
40.24	S. San Andreas;CH+CC+BB+NM+SM+NSB+SSB	CA	n/a	90	V	strike slip	0	14	384
40.24	S. San Andreas;CH+CC+BB+NM+SM+NSB+SSB+BG+CO	CA	n/a	86		strike slip	0.1	13	512
40.24	S. San Andreas;SSB+BG	CA	n/a	71		strike slip	0	13	101
40.24	S. San Andreas;NSB+SSB+BG+CO	CA	n/a	79		strike slip	0.2	12	206
40.24	S. San Andreas;CC+BB+NM+SM+NSB+SSB	CA	n/a	90	V	strike slip	0	14	322
40.24	S. San Andreas;CC+BB+NM+SM+NSB+SSB+BG	CA	n/a	85		strike slip	0	14	380
40.24	S. San Andreas;CC+BB+NM+SM+NSB+SSB+BG+CO	CA	n/a	86		strike slip	0.1	13	449
40.24	S. San Andreas;CH+CC+BB+NM+SM+NSB+SSB+BG	CA	n/a	86		strike slip	0	14	442

40.24	S. San Andreas;NM+SM+NSB+SSB	CA	n/a	90	V	strike slip	0	13	213
40.24	S. San Andreas;NM+SM+NSB+SSB+BG	CA	n/a	83		strike slip	0	14	271
40.24	S. San Andreas;NM+SM+NSB+SSB+BG+CO	CA	n/a	84		strike slip	0.1	13	340
40.24	S. San Andreas;NSB+SSB	CA	n/a	90	V	strike slip	0	13	79
40.24	S. San Andreas;NSB+SSB+BG	CA	n/a	75		strike slip	0	14	136
40.24	S. San Andreas;PK+CH+CC+BB+NM+SM+NSB+SSB	CA	n/a	90	V	strike slip	0.1	13	421
40.24	S. San Andreas;PK+CH+CC+BB+NM+SM+NSB+SSB+BG	CA	n/a	86		strike slip	0.1	13	479
40.24	S. San Andreas;PK+CH+CC+BB+NM+SM+NSB+SSB+BG+CO	CA	n/a	86		strike slip	0.1	13	548
40.24	S. San Andreas;SM+NSB+SSB	CA	n/a	90	V	strike slip	0	13	176
40.24	S. San Andreas;SM+NSB+SSB+BG	CA	n/a	81		strike slip	0	13	234
40.24	S. San Andreas;SM+NSB+SSB+BG+CO	CA	n/a	83		strike slip	0.1	13	303
40.24	S. San Andreas;SSB	CA	16	90	V	strike slip	0	13	43
40.24	S. San Andreas;SSB+BG+CO	CA	n/a	77		strike slip	0.2	12	170
40.24	S. San Andreas;BB+NM+SM+NSB+SSB	CA	n/a	90	V	strike slip	0	14	263
40.24	S. San Andreas;BB+NM+SM+NSB+SSB+BG	CA	n/a	84		strike slip	0	14	321
40.24	S. San Andreas;BB+NM+SM+NSB+SSB+BG+CO	CA	n/a	85		strike slip	0.1	13	390
40.75	Chino, alt 1	CA	1	50	SW	strike slip	0	9	24
42.30	S. San Andreas;BG+CO	CA	n/a	72		strike slip	0.3	12	125
42.30	S. San Andreas;BG	CA	n/a	58		strike slip	0	13	56
45.88	S. San Andreas;CC+BB+NM+SM+NSB	CA	n/a	90	V	strike slip	0	14	279
45.88	S. San Andreas;NSB	CA	22	90	V	strike slip	0	13	35
45.88	S. San Andreas;BB+NM+SM+NSB	CA	n/a	90	V	strike	0	14	220

						slip			
45.88	S. San Andreas;PK+CH+CC+BB+NM+SM+NSB	CA	n/a	90	V	strike slip	0.1	13	377
45.88	S. San Andreas;NM+SM+NSB	CA	n/a	90	V	strike slip	0	13	170
45.88	S. San Andreas;CH+CC+BB+NM+SM+NSB	CA	n/a	90	V	strike slip	0	14	341
45.88	S. San Andreas;SM+NSB	CA	n/a	90	V	strike slip	0	13	133
46.81	Elsinore;J+CM	CA	3	84	NE	strike slip	0	17	118
46.81	Elsinore;J	CA	3	84	NE	strike slip	0	19	75
48.53	San Joaquin Hills	CA	0.5	23	SW	thrust	2	13	27
54.60	Cucamonga	CA	5	45	N	thrust	0	8	28
55.06	Pinto Mtn	CA	2.5	90	V	strike slip	0	16	74
59.95	Cleghorn	CA	3	90	V	strike slip	0	16	25
60.19	Newport Inglewood Connected alt 2	CA	1.3	90	V	strike slip	0	11	208
60.19	Newport-Inglewood (Offshore)	CA	1.5	90	V	strike slip	0	10	66
60.19	Newport Inglewood Connected alt 1	CA	1.3	89		strike slip	0	11	208
63.05	San Jose	CA	0.5	74	NW	strike slip	0	15	20
64.77	North Frontal (West)	CA	1	49	S	reverse	0	16	50
66.12	San Jacinto;CC+B+SM	CA	n/a	90	V	strike slip	0.2	14	103
66.12	San Jacinto;CC	CA	4	90	V	strike slip	0	16	43
66.12	San Jacinto;CC+B	CA	n/a	90	V	strike slip	0.2	14	77
66.18	Puente Hills (Coyote Hills)	CA	0.7	26	N	thrust	2.8	15	17
67.22	Sierra Madre	CA	2	53	N	reverse	0	14	57
67.22	Sierra Madre Connected	CA	2	51		reverse	0	14	76
67.61	San Jacinto;C	CA	14	90	V	strike slip	0	17	47
71.41	Newport-Inglewood, alt 1	CA	1	88		strike slip	0	15	65

71.95	Rose Canyon	CA	1.5	90	V	strike slip	0	8	70
72.69	S. San Andreas;CC+BB+NM+SM	CA	n/a	90	V	strike slip	0	14	243
72.69	S. San Andreas;BB+NM+SM	CA	n/a	90	V	strike slip	0	14	184
72.69	S. San Andreas;NM+SM	CA	n/a	90	V	strike slip	0	14	134
72.69	S. San Andreas;CH+CC+BB+NM+SM	CA	n/a	90	V	strike slip	0	14	306
72.69	S. San Andreas;PK+CH+CC+BB+NM+SM	CA	n/a	90	V	strike slip	0.1	13	342
72.69	S. San Andreas;SM	CA	29	90	V	strike slip	0	13	98
73.24	Helendale-So Lockhart	CA	0.6	90	V	strike slip	0	13	114
75.07	North Frontal (East)	CA	0.5	41	S	thrust	0	16	27
76.15	Burnt Mtn	CA	0.6	67	W	strike slip	0	16	21
80.58	Puente Hills (Santa Fe Springs)	CA	0.7	29	N	thrust	2.8	15	11
81.27	Eureka Peak	CA	0.6	90	V	strike slip	0	15	19
82.83	Earthquake Valley	CA	2	90	V	strike slip	0	19	20
83.08	Clamshell-Sawpit	CA	0.5	50	NW	reverse	0	14	16
83.98	Lenwood-Lockhart-Old Woman Springs	CA	0.9	90	V	strike slip	0	13	145
84.74	Landers	CA	0.6	90	V	strike slip	0	15	95
84.90	Palos Verdes Connected	CA	3	90	V	strike slip	0	10	285
84.90	Palos Verdes	CA	3	90	V	strike slip	0	14	99
84.98	Coronado Bank	CA	3	90	V	strike slip	0	9	186
86.55	S. San Andreas;CO	CA	20	90	V	strike slip	0.6	11	69
88.59	Raymond	CA	1.5	79	N	strike slip	0	16	22
91.34	Puente Hills (LA)	CA	0.7	27	N	thrust	2.1	15	22
92.19	Johnson Valley (No)	CA	0.6	90	V	strike slip	0	16	35

92.75	Elysian Park (Upper)	CA	1.3	50	NE	reverse	3	15	20

Search Results

8 of 8 earthquakes in map area.

Click for more information

6.3	**7km SSE of Big Bear City, CA** 1992-06-28 15:05:30 (UTC)	3.6 km
7.3	**Landers, California Earthquake** 1992-06-28 11:57:34 (UTC)	-0.1 km
6.1	**17km NNE of Thousand Palms, California** 1992-04-23 04:50:23 (UTC)	11.6 km
6.0	**6km SSW of Morongo Valley, CA** 1986-07-08 09:20:44 (UTC)	9.5 km
6.0	**16km E of Desert Hot Springs, CA** 1948-12-04 23:43:16 (UTC)	6.0 km
6.0	**16km WSW of Oasis, CA** 1937-03-25 16:49:02 (UTC)	6.0 km
6.4	**Long Beach, California Earthquake** 1933-03-11 01:54:09 (UTC)	6.0 km
6.7	**Southern California** 1918-04-21 22:32:29 (UTC)	10.0 km

Didn't find what you were looking for?

- Check your Settings.
- Which earthquakes are included on the map and list?
- Felt something not shown – report it here.

Earthquakes updated

USGS Design Maps Summary Report

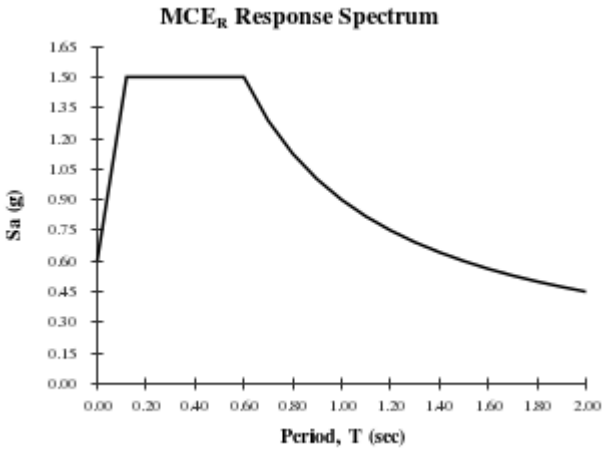
User–Specified Input

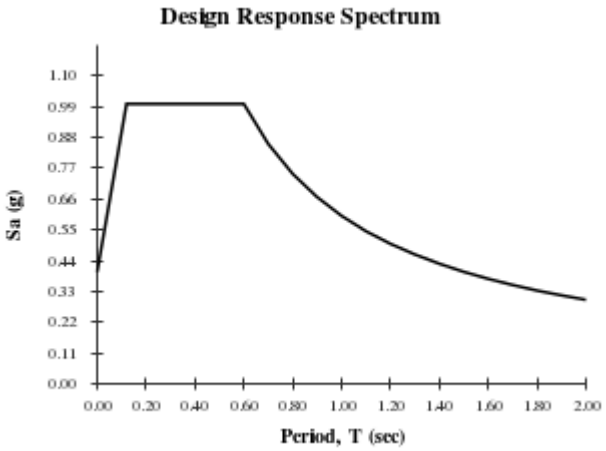
Building Code Reference Document	ASCE 7-10 Standard (which utilizes USGS hazard data available in 2008)
Site Coordinates	33.73806°N, 117.17949°W
Site Soil Classification	Site Class D – "Stiff Soil"
Risk Category	I/II/III

USGS–Provided Output

S_S =	1.500 g	S_{MS} =	1.500 g	S_{DS} =	1.000 g
S_1 =	0.600 g	S_{M1} =	0.900 g	S_{D1} =	0.600 g

For information on how the SS and S1 values above have been calculated from probabilistic (risk-targeted) and deterministic ground motions in the direction of maximum horizontal response, please return to the application and select the "2009 NEHRP" building code reference document.





For PGA_M, T_L, C_{RS}, and C_{R1} values, please view the detailed report.

Design Maps Detailed Report

ASCE 7-10 Standard (33.73806°N, 117.17949°W)

Site Class D – "Stiff Soil", Risk Category I/II/III

Section 11.4.1 — Mapped Acceleration Parameters

Note: Ground motion values provided below are for the direction of maximum horizontal spectral response acceleration. They have been converted from corresponding geometric mean ground motions computed by the USGS by applying factors of 1.1 (to obtain S_S) and 1.3 (to obtain S_1). Maps in the 2010 ASCE-7 Standard are provided for Site Class B. Adjustments for other Site Classes are made, as needed, in Section 11.4.3.

From Figure 22-1 [1]	S_S = 1.500 g
From Figure 22-2 [2]	S_1 = 0.600 g

Section 11.4.2 — Site Class

The authority having jurisdiction (not the USGS), site-specific geotechnical data, and/or the default has classified the site as Site Class D, based on the site soil properties in accordance with Chapter 20.

Table 20.3–1 Site Classification

Site Class	$\overline{v}_s$	$\overline{N}$ or $\overline{N}_{ch}$	$\overline{s}_u$
A. Hard Rock	>5,000 ft/s	N/A	N/A
B. Rock	2,500 to 5,000 ft/s	N/A	N/A
C. Very dense soil and soft rock	1,200 to 2,500 ft/s	>50	>2,000 psf
D. Stiff Soil	600 to 1,200 ft/s	15 to 50	1,000 to 2,000 psf
E. Soft clay soil	<600 ft/s	<15	<1,000 psf
	Any profile with more than 10 ft of soil having the characteristics: • Plasticity index *PI* > 20, • Moisture content *w* ≥ 40%, and • Undrained shear strength $\overline{s}_u$ < 500 psf		
F. Soils requiring site response analysis in accordance with Section 21.1	See Section 20.3.1		

For SI: 1ft/s = 0.3048 m/s 1lb/ft² = 0.0479 kN/m²

Section 11.4.3 — Site Coefficients and Risk–Targeted Maximum Considered Earthquake (MCE_R) Spectral Response Acceleration Parameters

Table 11.4–1: Site Coefficient F_a

Site Class	Mapped MCE_R Spectral Response Acceleration Parameter at Short Period				
	$S_S \leq 0.25$	$S_S = 0.50$	$S_S = 0.75$	$S_S = 1.00$	$S_S \geq 1.25$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of S_S

For Site Class = D and S_S = 1.500 g, F_a = 1.000

Table 11.4–2: Site Coefficient F_v

Site Class	Mapped MCE_R Spectral Response Acceleration Parameter at 1–s Period				
	$S_1 \leq 0.10$	$S_1 = 0.20$	$S_1 = 0.30$	$S_1 = 0.40$	$S_1 \geq 0.50$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.7	1.6	1.5	1.4	1.3
D	2.4	2.0	1.8	1.6	1.5
E	3.5	3.2	2.8	2.4	2.4
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of S_1

For Site Class = D and S_1 = 0.600 g, F_v = 1.500

Equation (11.4–1): $S_{MS} = F_a S_S = 1.000 \times 1.500 = 1.500$ g

Equation (11.4–2): $S_{M1} = F_v S_1 = 1.500 \times 0.600 = 0.900$ g

Section 11.4.4 — Design Spectral Acceleration Parameters

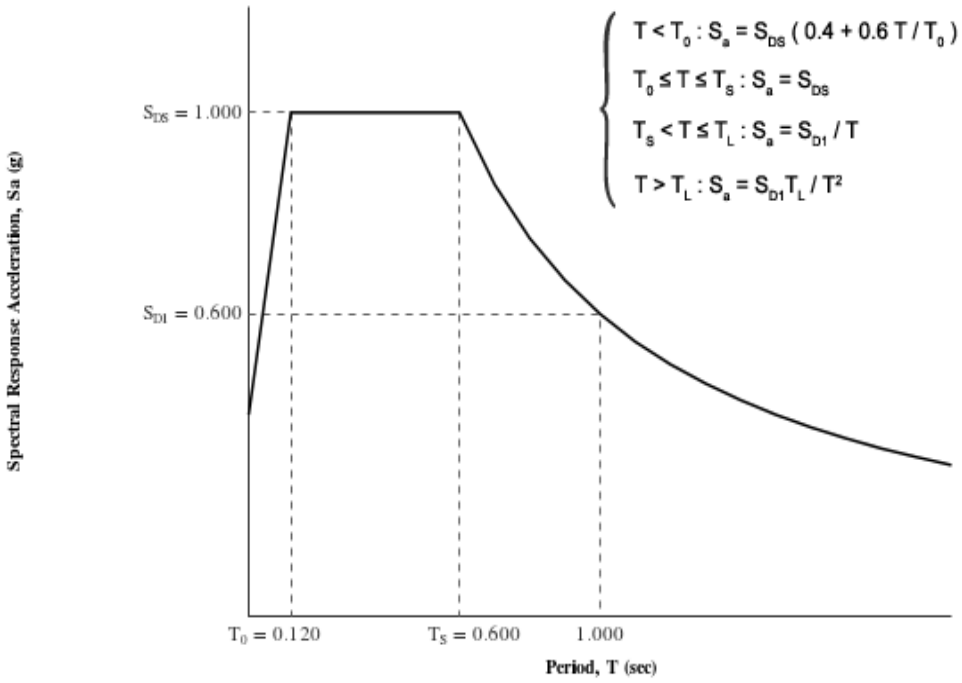
Equation (11.4–3): $S_{DS} = \frac{2}{3} S_{MS} = \frac{2}{3} \times 1.500 = 1.000$ g

Equation (11.4–4): $S_{D1} = \frac{2}{3} S_{M1} = \frac{2}{3} \times 0.900 = 0.600$ g

Section 11.4.5 — Design Response Spectrum

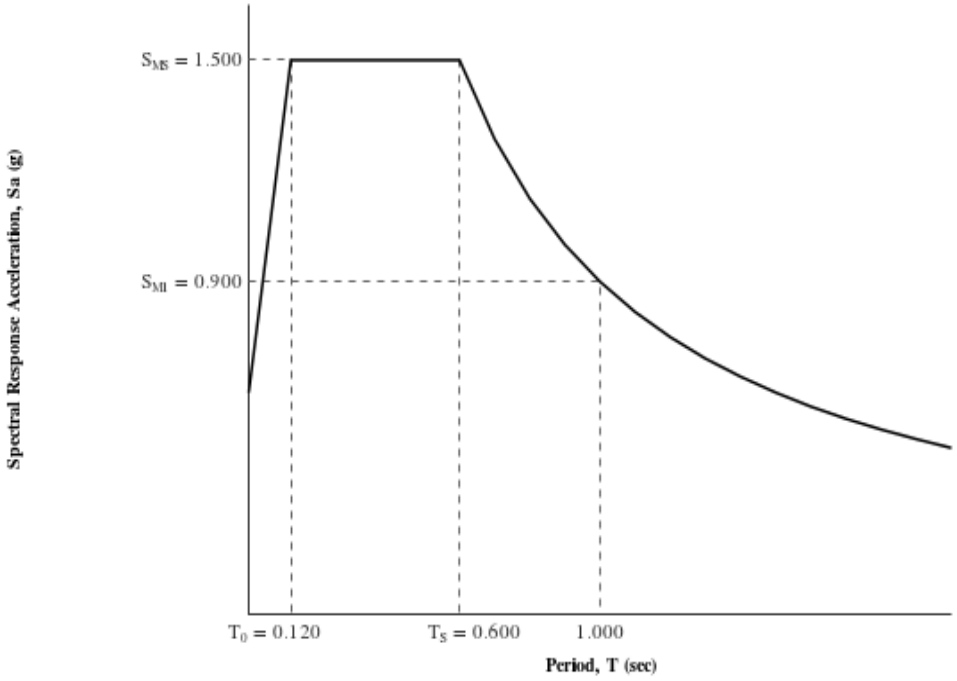
From Figure 22-12 [3] $T_L = 8$ seconds

Figure 11.4–1: Design Response Spectrum



Section 11.4.6 — Risk-Targeted Maximum Considered Earthquake (MCE_R) Response Spectrum

The MCE_R Response Spectrum is determined by multiplying the design response spectrum above by 1.5.



Section 11.8.3 — Additional Geotechnical Investigation Report Requirements for Seismic Design Categories D through F

From Figure 22-7 [4] PGA = 0.500

Equation (11.8–1): $PGA_M = F_{PGA}PGA = 1.000 \times 0.500 = 0.5$ g

Table 11.8–1: Site Coefficient F_{PGA}

Site Class	Mapped MCE Geometric Mean Peak Ground Acceleration, PGA				
	PGA ≤ 0.10	PGA = 0.20	PGA = 0.30	PGA = 0.40	PGA ≥ 0.50
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of PGA

For Site Class = D and PGA = 0.500 g, F_{PGA} = 1.000

Section 21.2.1.1 — Method 1 (from Chapter 21 – Site-Specific Ground Motion Procedures for Seismic Design)

From Figure 22-17 [5] C_{RS} = 1.057

From Figure 22-18 [6] C_{R1} = 1.034

Section 11.6 — Seismic Design Category

Table 11.6-1 Seismic Design Category Based on Short Period Response Acceleration Parameter

VALUE OF S_{DS}	**RISK CATEGORY**		
	I or II	**III**	**IV**
$S_{DS} < 0.167g$	A	A	A
$0.167g \le S_{DS} < 0.33g$	B	B	C
$0.33g \le S_{DS} < 0.50g$	C	C	D
$0.50g \le S_{DS}$	D	D	D

For Risk Category = I and S_{DS} = 1.000 g, Seismic Design Category = D

Table 11.6-2 Seismic Design Category Based on 1-S Period Response Acceleration Parameter

VALUE OF S_{D1}	**RISK CATEGORY**		
	I or II	**III**	**IV**
$S_{D1} < 0.067g$	A	A	A
$0.067g \le S_{D1} < 0.133g$	B	B	C
$0.133g \le S_{D1} < 0.20g$	C	C	D
$0.20g \le S_{D1}$	D	D	D

For Risk Category = I and S_{D1} = 0.600 g, Seismic Design Category = D

Note: When S_1 is greater than or equal to 0.75g, the Seismic Design Category is **E** for buildings in Risk Categories I, II, and III, and **F** for those in Risk Category IV, irrespective of the above.

Seismic Design Category ≡ "the more severe design category in accordance with Table 11.6-1 or 11.6-2" = D

Note: See Section 11.6 for alternative approaches to calculating Seismic Design Category.

References

1. *Figure 22-1*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-1.pdf
2. *Figure 22-2*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-2.pdf
3. *Figure 22-12*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-12.pdf
4. *Figure 22-7*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-7.pdf
5. *Figure 22-17*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-17.pdf
6. *Figure 22-18*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-18.pdf

APPENDIX E

ASPHALTIC CONCRETE PAVEMENT CALCULATIONS

PAVING DESIGN

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JN: **182161-10A** CONSULT: **SMP**
PROJECT: **Motte-Rancon Distribution Center**

CALCULATION SHEET # **AutoParking**

CALTRANS METHOD FOR DESIGN OF FLEXIBLE PAVEMENT

Input "R" value or "CBR" of native soil	12	
Type of Index Property - "R" value or "CBR" (C or R)	R	R Value
R Value used for Caltrans Method	12	
Input Traffic Index (TI)	5	
Calculated Total Gravel Equivalent (GE)	1.408	feet
Calculated Total Gravel Equivalent (GE)	16.896	inches
Calculated Gravel Factor (Gf) for A/C paving	2.53	
Gravel Factor for Base Course (Gf)	1.1	

Pavement sections provided below are considered equal; but, do not reflect reviewing agency minimums.

Gravel Equivalent GE (feet)	GE (inches)	Delta (inches)	INCHES A/C Section Thickness (inches)	INCHES Minimum Base (inches)	FEET A/C Section Thickness (feet)	FEET Minimum Base (feet)
0.63	7.60	9.29	3.0	8.4	0.25	0.70
0.74	8.87	8.02	3.5	7.2	0.29	0.60
0.76	9.13	7.77	3.6	7.2	0.30	0.60
0.84	10.14	6.76	4.0	6.0	0.33	0.50
0.89	10.65	6.25	4.2	5.4	0.35	0.45
0.95	11.41	5.49	4.5	4.8	0.38	0.40
1.01	12.17	4.73	4.8	4.2	0.40	0.35
1.06	12.67	4.22	5.0	3.6	0.42	0.30
1.27	15.21	1.69	6.0	1.8	0.50	0.15
2.11	25.35	-8.45	10.0		0.83	
2.53	30.42	-13.52	12.0		1.00	

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CALCULATION SHEET # **Auto Drives**

CALTRANS METHOD FOR DESIGN OF FLEXIBLE PAVEMENT

Input "R" value or "CBR" of native soil	12	
Type of Index Property - "R" value or "CBR" (C or R)	R	R Value
R Value used for Caltrans Method	12	
Input Traffic Index (TI)	6	
Calculated Total Gravel Equivalent (GE)	1.6896	feet
Calculated Total Gravel Equivalent (GE)	20.2752	inches
Calculated Gravel Factor (Gf) for A/C paving	2.31	
Gravel Factor for Base Course (Gf)	1.1	

Pavement sections provided below are considered equal; but, do not reflect reviewing agency minimums.

Gravel Equivalent GE (feet)	GE (inches)	Delta (inches)	INCHES A/C Section Thickness (inches)	INCHES Minimum Base (inches)	FEET A/C Section Thickness (feet)	FEET Minimum Base (feet)
0.58	6.94	13.33	3.0	12.0	0.25	1.00
0.67	8.10	12.18	3.5	10.8	0.29	0.90
0.69	8.33	11.95	3.6	10.8	0.30	0.90
0.77	9.26	11.02	4.0	10.2	0.33	0.85
0.81	9.72	10.56	4.2	9.6	0.35	0.80
0.87	10.41	9.86	4.5	9.0	0.38	0.75
0.93	11.11	9.17	4.8	8.4	0.40	0.70
0.96	11.57	8.71	5.0	7.8	0.42	0.65
1.16	13.88	6.39	6.0	6.0	0.50	0.50
1.93	23.14	-2.86	10.0		0.83	
2.31	27.77	-7.49	12.0		1.00	

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PROJECT: **Motte-Rancon Distribution Center**

CALCULATION SHEET # **Entrance**

CALTRANS METHOD FOR DESIGN OF FLEXIBLE PAVEMENT

Input "R" value or "CBR" of native soil	12	
Type of Index Property - "R" value or "CBR" (C or R)	R	R Value
R Value used for Caltrans Method	12	
Input Traffic Index (TI)	7	
Calculated Total Gravel Equivalent (GE)	1.9712	feet
Calculated Total Gravel Equivalent (GE)	23.6544	inches
Calculated Gravel Factor (Gf) for A/C paving	2.14	
Gravel Factor for Base Course (Gf)	1.1	

Pavement sections provided below are considered equal; but, do not reflect reviewing agency minimums.

Gravel Equivalent GE (feet)	GE (inches)	Delta (inches)	INCHES A/C Section Thickness (inches)	INCHES Minimum Base (inches)	FEET A/C Section Thickness (feet)	FEET Minimum Base (feet)
0.54	6.43	17.23	3.0	15.6	0.25	1.30
0.62	7.50	16.16	3.5	14.4	0.29	1.20
0.64	7.71	15.94	3.6	14.4	0.30	1.20
0.71	8.57	15.09	4.0	13.8	0.33	1.15
0.75	9.00	14.66	4.2	13.2	0.35	1.10
0.80	9.64	14.01	4.5	12.6	0.38	1.05
0.86	10.28	13.37	4.8	12.0	0.40	1.00
0.89	10.71	12.94	5.0	12.0	0.42	1.00
1.07	12.85	10.80	6.0	9.6	0.50	0.80
1.79	21.42	2.23	10.0	1.8	0.83	0.15
2.14	25.71	-2.05	12.0		1.00	

APPENDIX F

GENERAL EARTHWORK AND GRADING SPECIFICATIONS

EARTH-STRATA

General Earthwork and Grading Specifications

General

Intent: These General Earthwork and Grading Specifications are intended to be the minimum requirements for the grading and earthwork shown on the approved grading plan(s) and/or indicated in the geotechnical report(s). These General Earthwork and Grading Specifications should be considered a part of the recommendations contained in the geotechnical report(s) and if they are in conflict with the geotechnical report(s), the specific recommendations in the geotechnical report shall supersede these more general specifications. Observations made during earthwork operations by the project Geotechnical Consultant may result in new or revised recommendations that may supersede these specifications and/or the recommendations in the geotechnical report(s).

The Geotechnical Consultant of Record: The Owner shall employ a qualified Geotechnical Consultant of Record (Geotechnical Consultant), prior to commencement of grading or construction. The Geotechnical Consultant shall be responsible for reviewing the approved geotechnical report(s) and accepting the adequacy of the preliminary geotechnical findings, conclusions, and recommendations prior to the commencement of the grading or construction.

Prior to commencement of grading or construction, the Owner shall coordinate with the Geotechnical Consultant, and Earthwork Contractor (Contractor) to schedule sufficient personnel for the appropriate level of observation, mapping, and compaction testing.

During earthwork and grading operations, the Geotechnical Consultant shall observe, map, and document the subsurface conditions to confirm assumptions made during the geotechnical design phase of the project. Should the observed conditions differ significantly from the interpretive assumptions made during the design phase, the Geotechnical Consultant shall recommend appropriate changes to accommodate the observed conditions, and notify the reviewing agency where required.

The Geotechnical Consultant shall observe the moisture conditioning and processing of the excavations and fill materials. The Geotechnical Consultant should perform periodic relative density testing of fill materials to verify that the attained level of compaction is being accomplished as specified.

The Earthwork Contractor: The Earthwork Contractor (Contractor) shall be qualified, experienced, and knowledgeable in earthwork logistics, preparation and processing of earth materials to receive compacted fill, moisture-conditioning and processing of fill, and compacting fill. The Contractor shall be provided with the approved grading plans and geotechnical report(s) for his review and acceptance of responsibilities, prior to commencement of grading. The Contractor shall be solely responsible for performing the grading in accordance with the approved grading plans and geotechnical report(s). Prior to commencement of grading, the Contractor shall prepare and submit to the Owner and the Geotechnical Consultant a work plan that indicates the sequence of earthwork grading, the number of "equipment" of work and the estimated quantities of daily earthwork contemplated for the site. The Contractor shall inform the Owner and the Geotechnical Consultant of work schedule changes and revisions to the work plan at least 24 hours in advance of such changes so that appropriate personnel will be available for observation and testing. No assumptions shall be made by the Contractor with regard to whether the Geotechnical Consultant is aware of all grading operations.

It is the sole responsibility of the Contractor to provide adequate equipment and methods to accomplish the earthwork operations in accordance with the applicable grading codes and agency ordinances, these specifications, and the recommendations in the approved geotechnical report(s) and grading plan(s). At the sole discretion of the Geotechnical Consultant, any unsatisfactory conditions, such as unsuitable earth materials, improper moisture conditioning, inadequate compaction, insufficient buttress keyway size, adverse weather conditions, etc., resulting in a quality of work less than required in the approved grading plans and geotechnical report(s), the Geotechnical Consultant shall reject the work and may recommend to the Owner that grading be stopped until conditions are corrected.

Preparation of Areas for Compacted Fill

Clearing and Grubbing: Vegetation, such as brush, grass, roots, and other deleterious material shall be sufficiently removed and properly disposed in a method acceptable to the Owner, Geotechnical Consultant, and governing agencies.

The Geotechnical Consultant shall evaluate the extent of these removals on a site by site basis. Earth materials to be placed as compacted fill shall not contain more than 1 percent organic materials (by volume). No compacted fill lift shall contain more than 10 percent organic matter.

Should potentially hazardous materials be encountered, the Contractor shall stop work in the affected area, and a hazardous materials specialist shall immediately be consulted to evaluate the potentially hazardous materials, prior to continuing to work in that area.

It is our understanding that the State of California defines most refined petroleum products (gasoline, diesel fuel, motor oil, grease, coolant, etc.) as hazardous waste. As such, indiscriminate dumping or spillage of these fluids may constitute a misdemeanor, punishable by fines and/or imprisonment, and shall be prohibited. The contractor is responsible for all hazardous waste related to his operations. The Geotechnical Consultant does not have expertise in this area. If hazardous waste is a concern, then the Owner should contract the services of a qualified environmental assessor.

Processing: Exposed earth materials that have been observed to be satisfactory for support of compacted fill by the Geotechnical Consultant shall be scarified to a minimum depth of 6 inches. Exposed earth materials that are not observed to be satisfactory shall be removed or alternative recommendations may be provided by the Geotechnical Consultant. Scarification shall continue until the exposed earth materials are broken down and free of oversize material and the working surface is reasonably uniform, flat, and free of uneven features that would inhibit uniform compaction. The earth materials should be moistened or air dried to near optimum moisture content, prior to compaction.

Overexcavation: The Cut Lot Typical Detail and Cut/Fill Transition Lot Typical Detail, included herein provides a graphic illustration that depicts typical overexcavation recommendations made in the approved geotechnical report(s) and/or grading plan(s).

Keyways and Benching: Where fills are to be placed on slopes steeper than 5:1 (horizontal to vertical units), the ground shall be thoroughly benched as compacted fill is placed. Please see the three Keyway and Benching Typical Details with subtitles Cut Over Fill Slope, Fill Over Cut Slope, and Fill Slope for a graphic illustration. The lowest bench or smallest keyway shall be a minimum of 15 feet wide (or ½ the proposed slope height) and at least 2 feet into competent earth materials as advised by the Geotechnical Consultant. Typical benches shall be excavated a minimum height of 4 feet into competent earth materials or as recommended by the Geotechnical Consultant. Fill placed on slopes steeper than 5:1 should be thoroughly benched or otherwise excavated to provide a flat subgrade for the compacted fill.

Evaluation/Acceptance of Bottom Excavations: All areas to receive compacted fill (bottom excavations), including removal excavations, processed areas, keyways, and benching, shall be observed, mapped, general elevations recorded, and/or tested prior to being accepted by the Geotechnical Consultant as suitable to receive compacted fill. The Contractor shall obtain a written acceptance from the Geotechnical Consultant prior to placing compacted fill. A licensed surveyor shall provide the survey control for determining elevations of bottom excavations, processed areas, keyways, and

benching. The Geotechnical Consultant is not responsible for erroneously located, fills, subdrain systems, or excavations.

Fill Materials

General: Earth material to be used as compacted fill should to a large extent be free of organic matter and other deleterious substances as evaluated and accepted by the Geotechnical Consultant.

Oversize: Oversize material is rock that does not break down into smaller pieces and has a maximum diameter greater than 8 inches. Oversize rock shall not be included within compacted fill unless specific methods and guidelines acceptable to the Geotechnical Consultant are followed. For examples of methods and guidelines of oversize rock placement see the enclosed Oversize Rock Disposal Detail. The inclusion of oversize materials in the compacted fill shall only be acceptable if the oversize material is completely surrounded by compacted fill or thoroughly jetted granular materials. No oversize material shall be placed within 10 vertical feet of finish grade or within 2 feet of proposed utilities or underground improvements.

Import: Should imported earth materials be required, the proposed import materials shall meet the requirements of the Geotechnical Consultant. Well graded, very low expansion potential earth materials free of organic matter and other deleterious substances are usually sought after as import materials. However, it is generally in the Owners best interest that potential import earth materials are provided to the Geotechnical Consultant to determine their suitability for the intended purpose. At least 48 hours should be allotted for the appropriate laboratory testing to be performed, prior to starting the import operations.

Fill Placement and Compaction Procedures

Fill Layers: Fill materials shall be placed in areas prepared to receive fill in nearly horizontal layers not exceeding 8 inches in loose thickness. Thicker layers may be accepted by the Geotechnical Consultant, provided field density testing indicates that the grading procedures can adequately compact the thicker layers. Each layer of fill shall be spread evenly and thoroughly mixed to obtain uniformity within the earth materials and consistent moisture throughout the fill.

Moisture Conditioning of Fill: Earth materials to be placed as compacted fill shall be watered, dried, blended, and/or mixed, as needed to obtain relatively uniform moisture contents that are at or slightly above optimum. The maximum density and optimum moisture content tests should be performed in accordance with the American Society of Testing and Materials (ASTM test method D1557-00).

Compaction of Fill: After each layer has been moisture-conditioned, mixed, and evenly spread, it should be uniformly compacted to a minimum of 90 percent of maximum dry density as determined by ASTM test method D1557-00. Compaction equipment shall be adequately sized and be either specifically designed for compaction of earth materials or be proven to consistently achieve the required level of compaction.

Compaction of Fill Slopes: In addition to normal compaction procedures specified above, additional effort to obtain compaction on slopes is needed. This may be accomplished by backrolling of slopes with sheepsfoot rollers as the fill is being placed, by overbuilding the fill slopes, or by other methods producing results that are satisfactory to the Geotechnical Consultant. Upon completion of grading, relative compaction of the fill and the slope face shall be a minimum of 90 percent of maximum density per ASTM test method D1557-00.

Compaction Testing of Fill: Field tests for moisture content and relative density of the compacted fill earth materials shall be periodically performed by the Geotechnical Consultant. The location and frequency of tests shall be at the Geotechnical Consultant's discretion based on field observations. Compaction test locations will not necessarily be random. The test locations may or may not be selected to verify minimum compaction requirements in areas that are typically prone to inadequate compaction, such as close to slope faces and near benching.

Frequency of Compaction Testing: Compaction tests shall be taken at minimum intervals of every 2 vertical feet and/or per 1,000 cubic yards of compacted materials placed. Additionally, as a guideline, at least one (1) test shall be taken on slope faces for each 5,000 square feet of slope face and/or for each 10 vertical feet of slope. The Contractor shall assure that fill placement is such that the testing schedule described herein can be accomplished by the Geotechnical Consultant. The Contractor shall stop or slow down the earthwork operations to a safe level so that these minimum standards can be obtained.

Compaction Test Locations: The approximate elevation and horizontal coordinates of each test location shall be documented by the Geotechnical Consultant. The Contractor shall coordinate with the Surveyor to assure that sufficient grade stakes are established. This will provide the Geotechnical Consultant with sufficient accuracy to determine the approximate test locations and elevations. The Geotechnical Consultant can not be responsible for staking erroneously located by the Surveyor or Contractor. A minimum of two grade stakes should be provided at a maximum horizontal distance of 100 feet and vertical difference of less than 5 feet.

Subdrain System Installation

Subdrain systems shall be installed in accordance with the approved geotechnical report(s), the approved grading plan, and the typical details provided herein. The Geotechnical Consultant may recommend additional subdrain systems and/or changes to the subdrain systems described herein, with regard to the extent, location, grade, or material depending on conditions encountered during grading or other factors. All subdrain systems shall be surveyed by a licensed land surveyor (except for retaining wall subdrain systems) to verify line and grade after installation and prior to burial. Adequate time should be allowed by the Contractor to complete these surveys.

Excavation

All excavations and over-excavations for remedial purposes shall be evaluated by the Geotechnical Consultant during grading operations. Remedial removal depths indicated on the geotechnical plans are estimates only. The actual removal depths and extent shall be determined by the Geotechnical Consultant based on the field evaluation of exposed conditions during grading operations. Where fill over cut slopes are planned, the cut portion of the slope shall be excavated, evaluated, and accepted by the Geotechnical Consultant prior to placement of the fill portion of the proposed slope, unless specifically addressed by the Geotechnical Consultant. Typical details for cut over fill slopes and fill over cut slopes are provided herein.

Trench Backfill

1) The Contractor shall follow all OHSA and Cal/OSHA requirements for trench excavation safety.

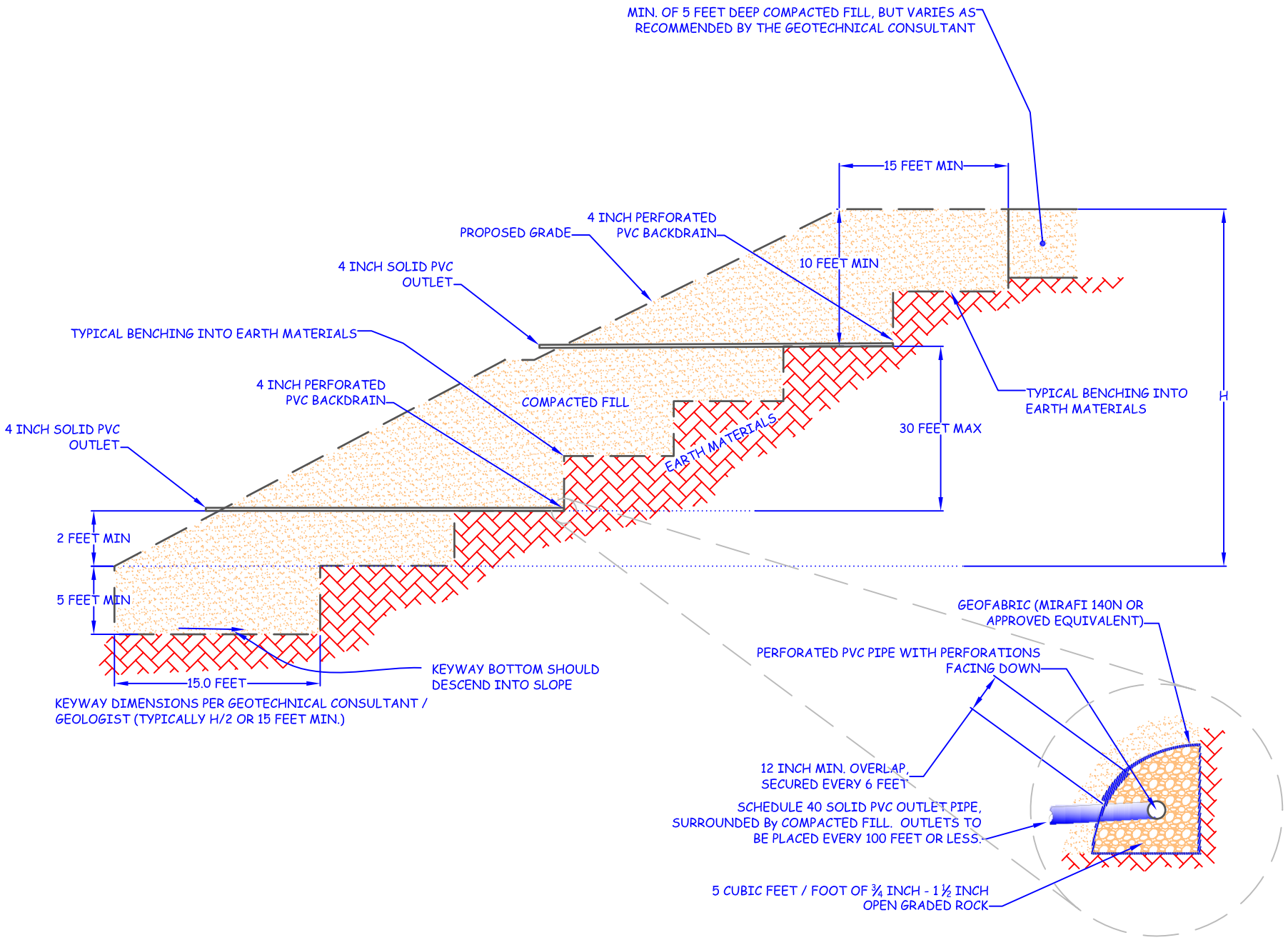
2) Bedding and backfill of utility trenches shall be done in accordance with the applicable provisions in the Standard Specifications of Public Works Construction. Bedding materials shall have a Sand Equivalency more than 30 (SE>30). The bedding shall be placed to 1 foot over the conduit and thoroughly jetting to provide densification. Backfill should be compacted to a minimum of 90 percent of maximum dry density, from 1 foot above the top of the conduit to the surface.

3) Jetting of the bedding materials around the conduits shall be observed by the Geotechnical Consultant.

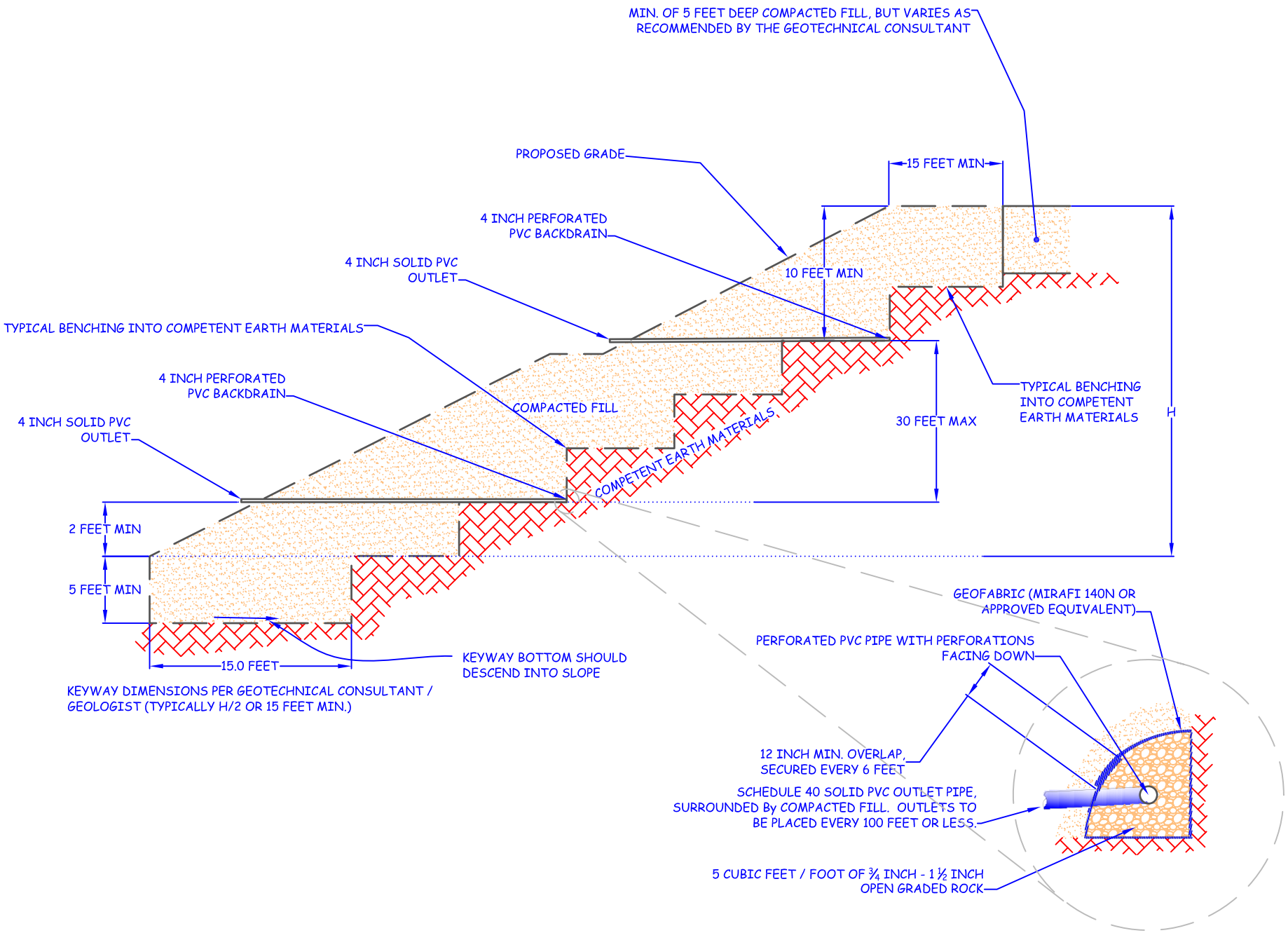
4) The Geotechnical Consultant shall test trench backfill for the minimum compaction requirements recommended herein. At least one test should be conducted for every 300 linear feet of trench and for each 2 vertical feet of backfill.

5) For trench backfill the lift thicknesses shall not exceed those allowed in the Standard Specifications of Public Works Construction, unless the Contractor can demonstrate to the Geotechnical Consultant that the fill lift can be compacted to the minimum relative compaction by his alternative equipment or method.

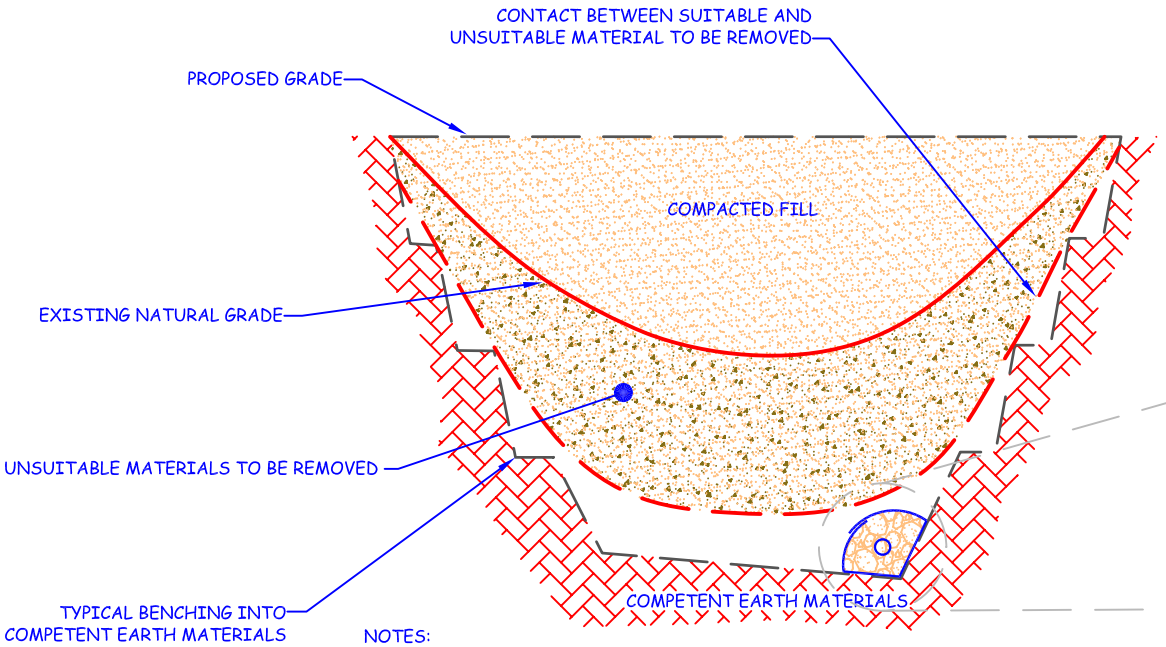
STABILIZATION FILL TYPICAL DETAIL

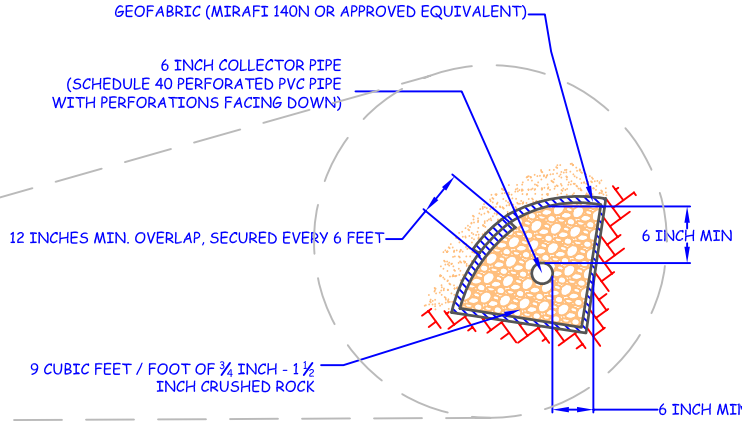


BUTTRESS TYPICAL DETAIL



CANYON SUBDRAIN SYSTEM TYPICAL DETAIL

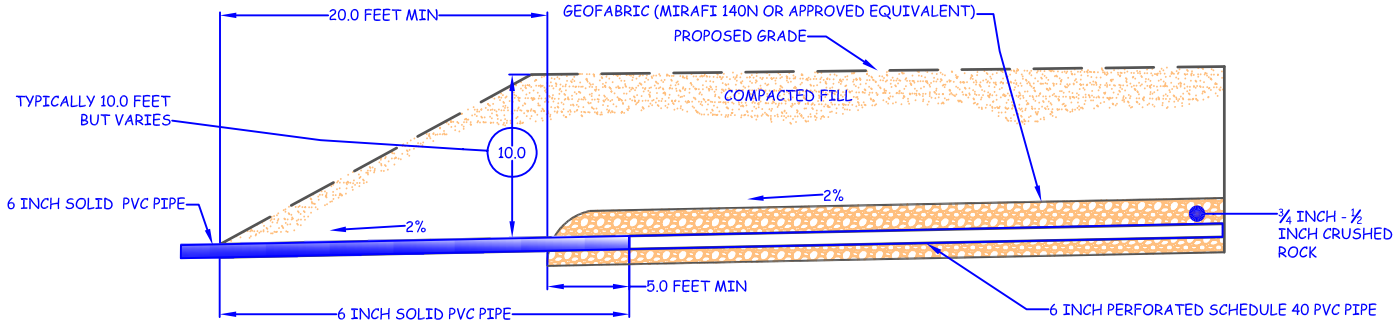




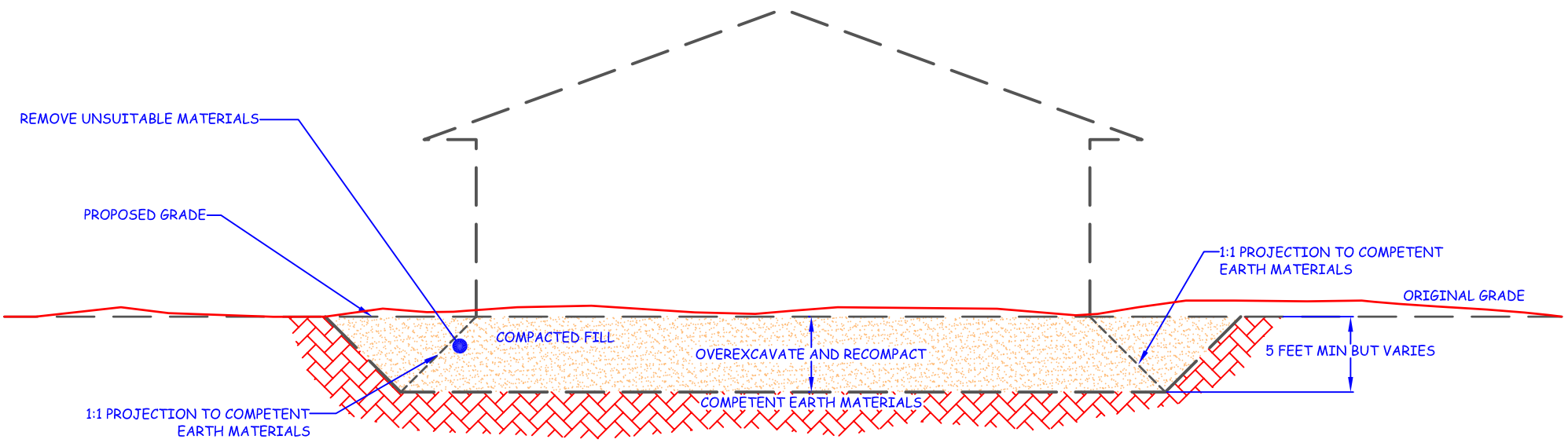
NOTES:
1 - CONTINUOUS RUNS IN EXCESS OF 500 FEET LONG WILL REQUIRE AN 8 INCH DIAMETER PIPE.

2 - FINAL 20 FEET OF PIPE AT OUTLET WILL BE SOLID AND BACKFILLED WITH COMPACTED FINE-GRAINED EARTH MATERIALS.

CANYON SUBDRAIN TYPICAL OUTLET



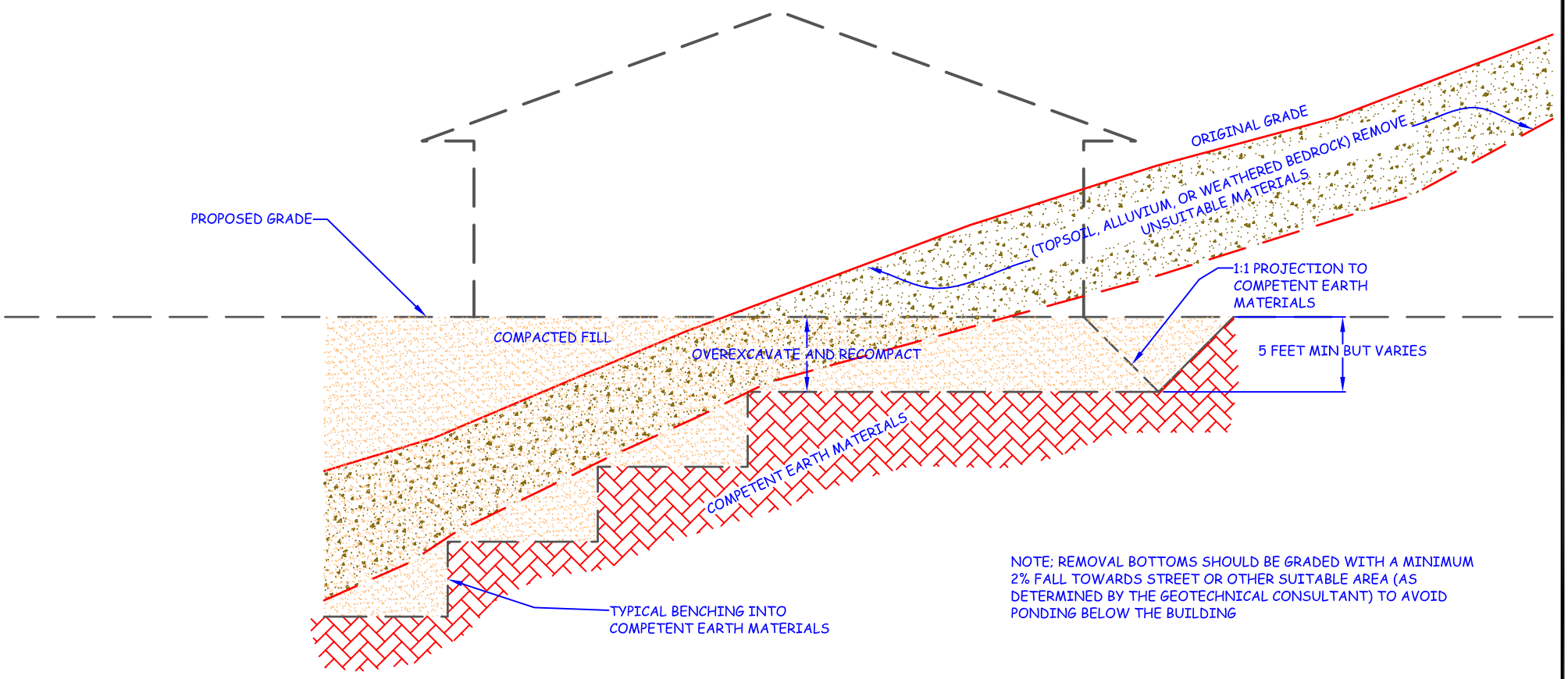
CUT LOT TYPICAL DETAIL



NOTE; REMOVAL BOTTOMS SHOULD BE GRADED WITH A MINIMUM 2% FALL TOWARDS STREET OR OTHER SUITABLE AREA (AS DETERMINED BY THE GEOTECHNICAL CONSULTANT) TO AVOID PONDING BELOW THE BUILDING

NOTE: WHERE DESIGN CUT LOTS ARE EXCAVATED ENTIRELY INTO COMPETENT EARTH MATERIALS, OVEREXCAVATION MAY STILL BY NEEDED FOR HARD-ROCK CONDITIONS OR MATERIALS WITH VARIABLE EXPANSION POTENTIALS

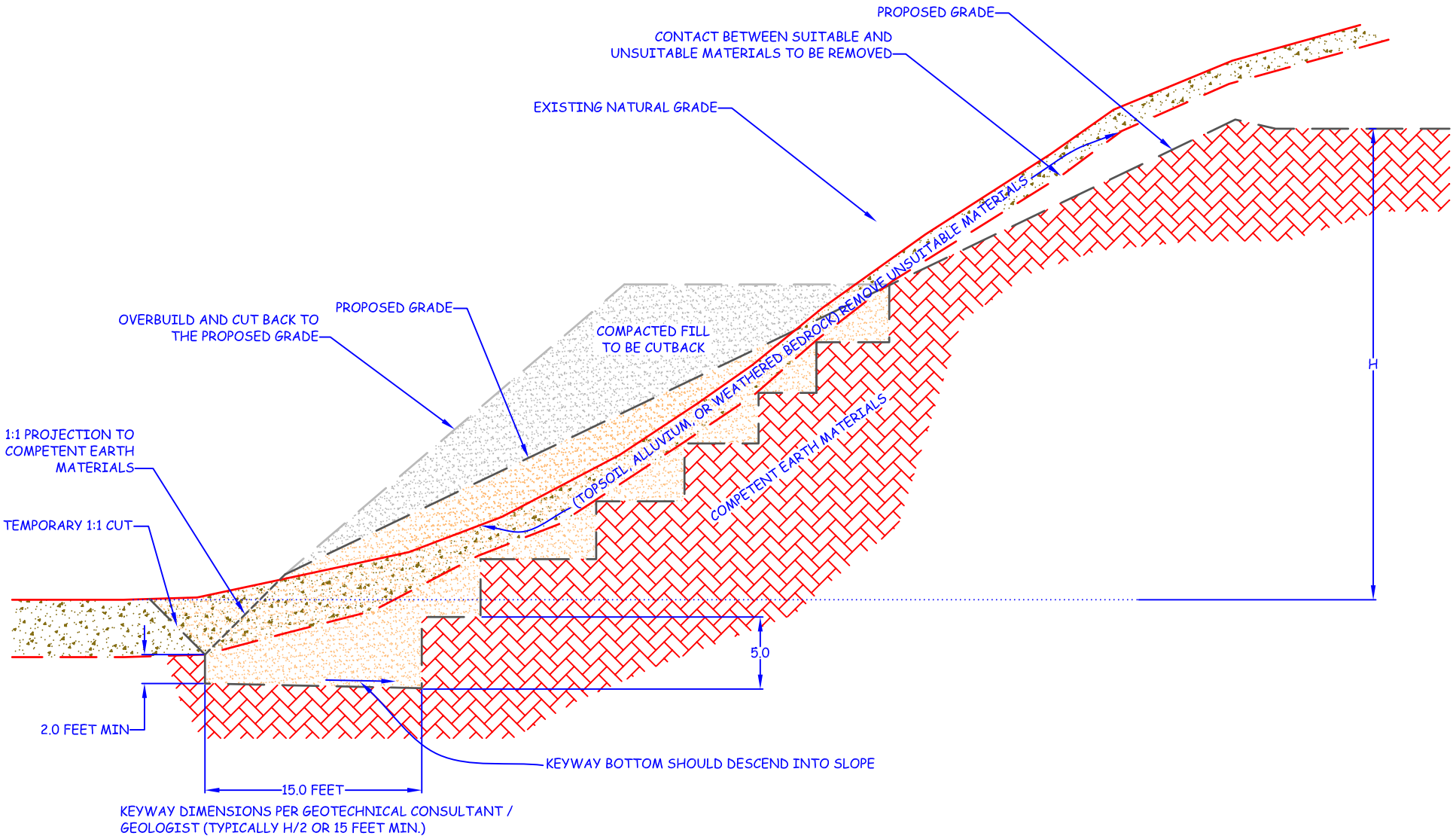
CUT / FILL TRANSITION LOT TYPICAL DETAIL



NOTE; REMOVAL BOTTOMS SHOULD BE GRADED WITH A MINIMUM 2% FALL TOWARDS STREET OR OTHER SUITABLE AREA (AS DETERMINED BY THE GEOTECHNICAL CONSULTANT) TO AVOID PONDING BELOW THE BUILDING

NOTE: WHERE DESIGN CUT LOTS ARE EXCAVATED ENTIRELY INTO COMPETENT EARTH MATERIALS, OVEREXCAVATION MAY STILL BY NEEDED FOR HARD-ROCK CONDITIONS OR MATERIALS WITH VARIABLE EXPANSION POTENTIALS

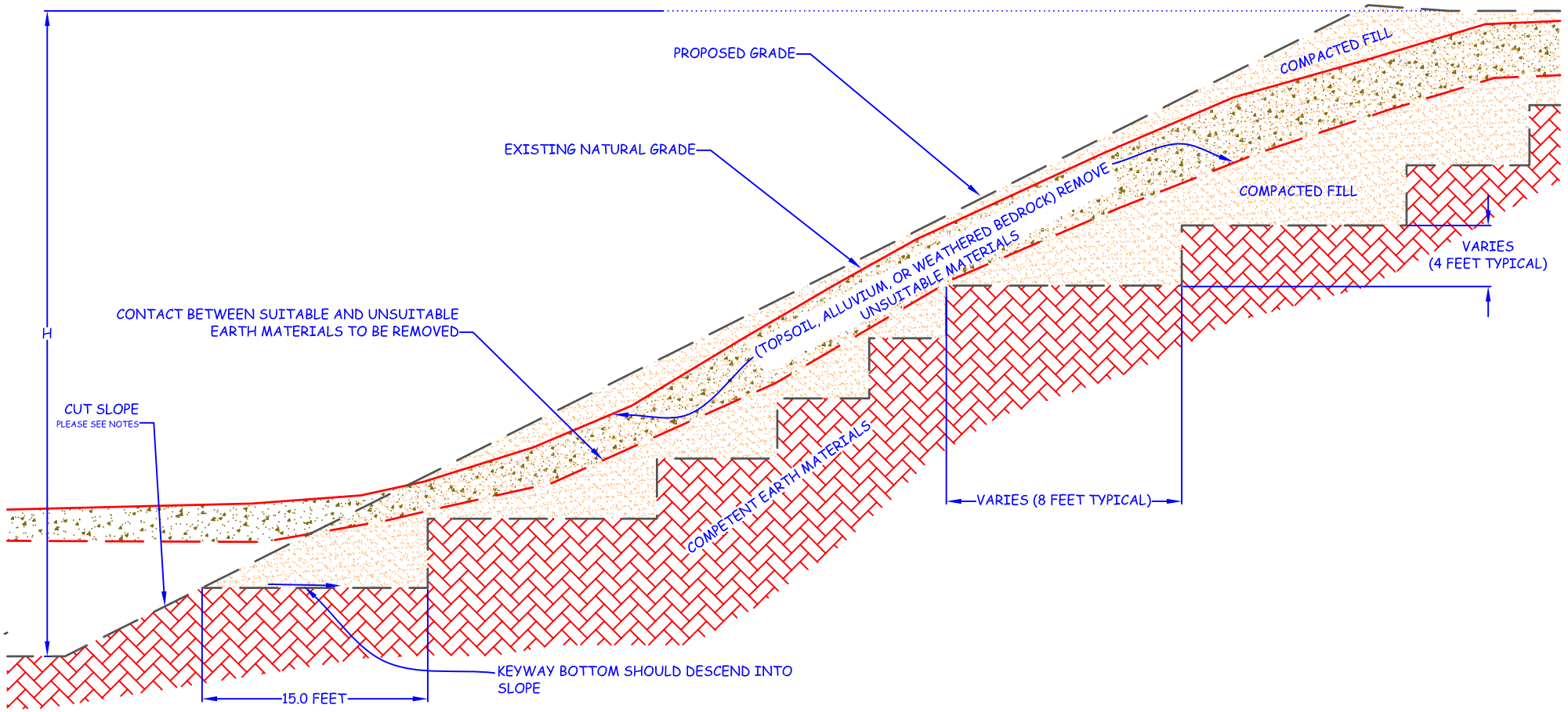
KEYWAY & BENCHING TYPICAL DETAILS
CUT OVER FILL SLOPE



NOTE:

NATURAL SLOPES STEEPER THAN 5:1 (H:V) MUST BE BENCHED INTO COMPETENT EARTH MATERIALS

KEYWAY & BENCHING TYPICAL DETAILS
FILL OVER CUT SLOPE



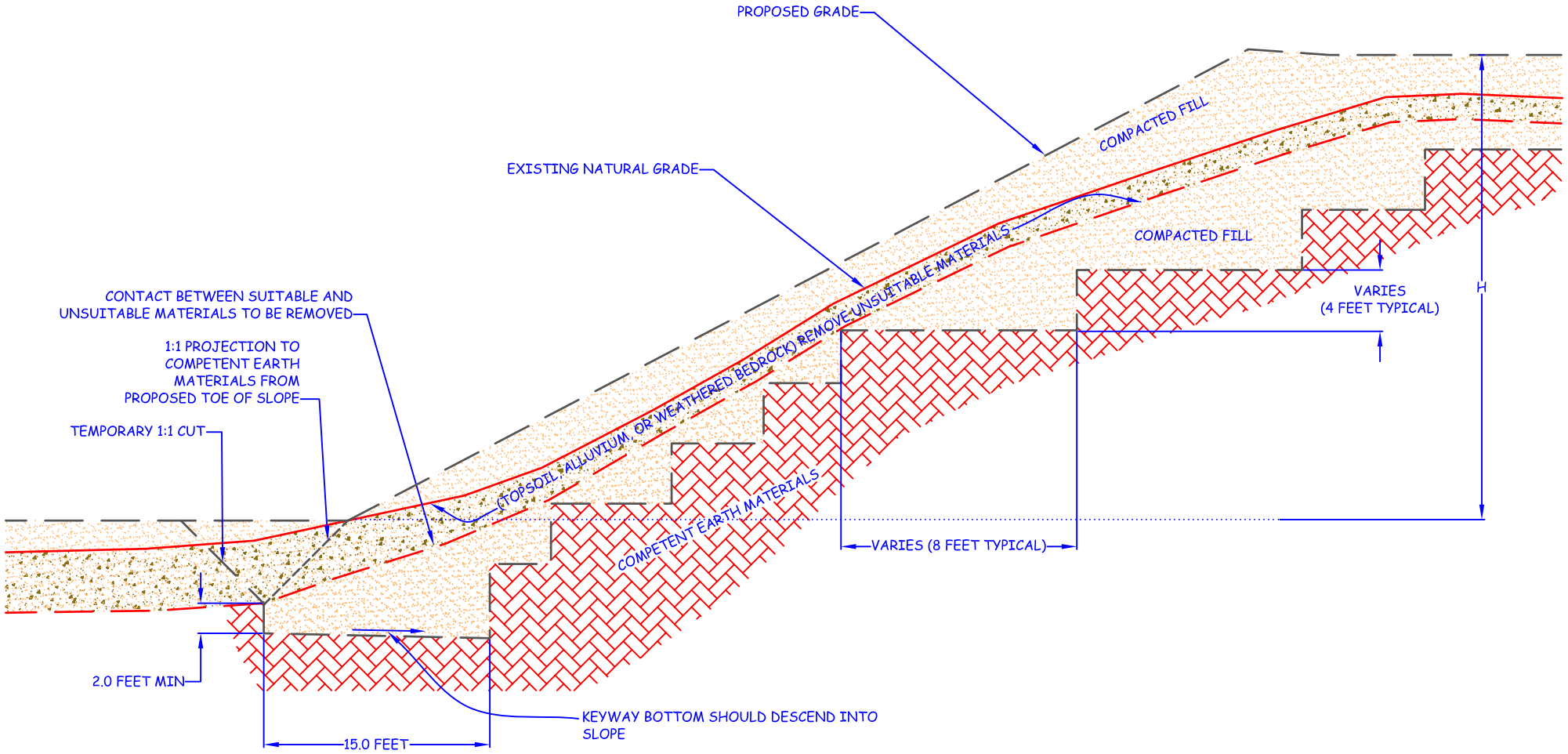
KEYWAY DIMENSIONS PER GEOTECHNICAL CONSULTANT / GEOLOGIST (TYPICALLY H/2 OR 15 FEET MIN.)

NOTES:

NATURAL SLOPES STEEPER THAN 5:1 (H:V) MUST BE BENCHED INTO COMPETENT EARTH MATERIALS

THE CUT SLOPE MUST BE CONSTRUCTED FIRST

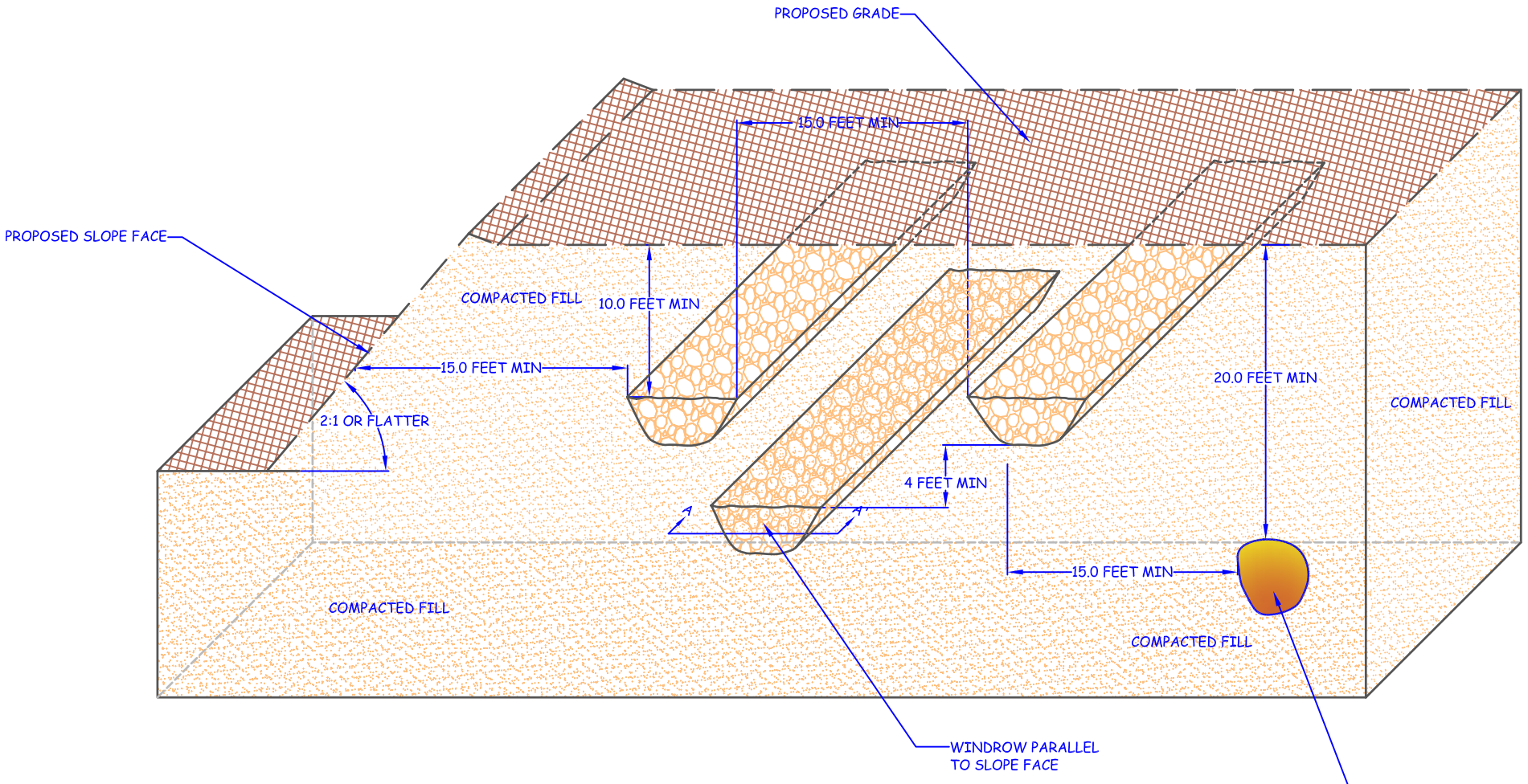
KEYWAY & BENCHING TYPICAL DETAILS
FILL SLOPE



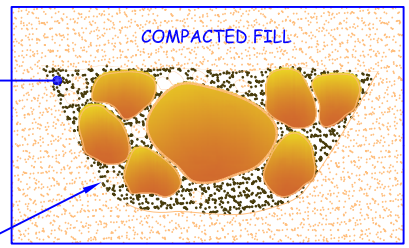
NOTES:

NATURAL SLOPES STEEPER THAN 5:1 (H:V) MUST BE BENCHED INTO COMPETENT EARTH MATERIALS

OVERSIZE ROCK TYPICAL DETAIL



CROSS SECTION A-A'

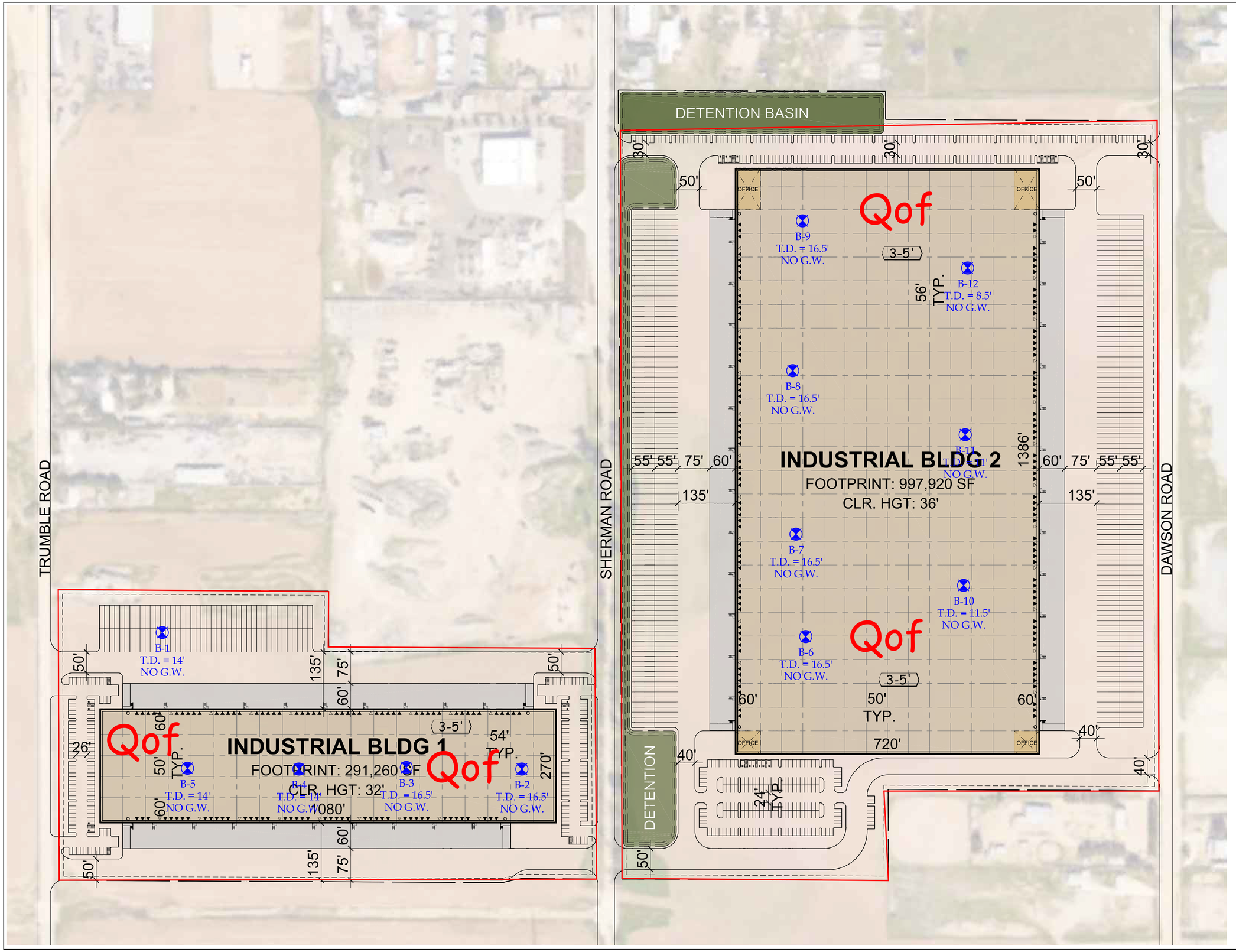


JETTING OF APPROVED
GRANULAR MATERIAL

EXCAVATED TRENCH
OR DOZER V-CUT

NOTES:

OVERSIZE ROCK IS LARGER THAN
8 INCHES IN MAX DIAMETER



LEGEND

Locations are Approximate

Geologic Units

Qof - Quaternary Old Fan Deposits

Symbols

- Limits of Report
- B-12 T.D. = 8.5' NO G.W. - Boring Location Including Total Depth and Depth to Groundwater
- 3-5' - Recommended Removal Depths

North

GEOTECHNICAL MAP

LOCATED SOUTH OF ETHANAC ROAD, EAST OF TRUMBLE ROAD AND WEST OF DAWSON ROAD

CITY OF MENIFEE, RIVERSIDE COUNTY, CALIFORNIA

APN 331-110-027, 331-110-035, 331-110-041, 331-140-110, AND 33-140-025

PROJECT	PROPOSED MOTTE RANCON DISTRIBUTION CENTER		
CLIENT	MS. CARISSA JAINSWORTH		
PROJECT NO.	182161-10A		
DATE	MAY 2018		
SCALE	1:100		
DWG XREFS			
REVISION			
DRAWN BY	JDG	PLATE	1

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Z:\18 Projects\182161 - Mike Naggar & Assoc, APN 331-140-025, 331-140-041,
331-140-010, MR-DC, Sherman & Ethanac, Perris, Prelim, Infiltration\CAD\182161-10A GEOTECH MAP.dwg, Adobe PDF, 1:1, Plot Scale

Earth Strata Geotechnical Services, Inc.
Geotechnical, Environmental and Materials Testing Consultants

May 16, 2018

Project No. 182161-12B

Ms. Carissa Hainsworth
MIKE NAGGAR & ASSOCIATES
445 South D Street
Perris, CA 92570

Subject: **Infiltration Testing for Water Quality Treatment Areas, Proposed Motte Rancon Distribution Center (MR-DC), Assessor Parcel Numbers 331-140-010 and 331-140-025, Located South of Ethanac Road and East of Sherman Road, City of Menifee, Riverside County, California**

Earth Strata Geotechnical Services is pleased to present this infiltration feasibility report for the proposed Motte Rancon Distribution Center (MR-DC), located east of Sherman Road, west of Dawson Road, and north of Mclaughlin Road, Assessor Parcel Numbers 331-140-010 and 331-140-025, in the City of Menifee, Riverside County, California. The purpose of our study was to determine the infiltration rates and physical characteristics of the subsurface earth materials at the approximate depth of the proposed WQMP area within the proposed development. This feasibility report provides the infiltration rates to be used for the design and the development of the water quality management plan, where applicable.

PROPERTY DESCRIPTION

The subject property is located east of Sherman Road, west of Dawson Road, and north of Mclaughlin Road in the city of Menifee, Riverside County, California (see Figure 1). The subject property consists of 59.78 acres of previously undeveloped parcels of land. The site has relatively flat terrain with scattered brush scattered throughout the site. The property consists of two (2) contiguous parcels, assessor parcel numbers 331-140-010 and 331-140-025. The property is bounded by Mclaughlin Road to the South, Sherman Road to the west, Dawson Road to the east, and developed parcels to the North. The subject property is underlain by Old Alluvial Fan deposits (Qof).

PROPOSED CONSTRUCTION

Based on the proposed site plan provided by Ware Malcom, the proposed development as illustrated on the conceptual site plans will consist of an industrial development complete with interior streets, utilities, driveways, parking areas, and two (2) onsite water quality treatment basins.

SUBSURFACE EXPLORATION AND INFILTRATION TESTING

SUBSURFACE EXPLORATION

Subsurface exploration of the subject site consisted of eight (8) exploratory borings within each of the proposed basins to depths of 16.5 feet, conducted on May 15 and 17, 2018. The approximate locations of the exploratory excavations are shown on the attached Infiltration Location Map, Plate 1.

EARTH MATERIALS

The earth materials on the site are primarily comprised of undocumented Fill and Old Fan Deposits and Granitic Bedrock. A general description of the dominant earth materials observed on the site is provided below:

- Topsoil: Topsoil / residual soils blanketed most of the proposed basin areas to a depth of approximately 2 feet below existing grade.

- Quaternary Alluvial Fan Deposits (map symbol Qof): Quaternary Alluvial Fan Deposits; fine to coarse silty sand, with different amounts of silt and clay. The alluvium color varied from light brown to dark brown, slightly moist to moist, loose to medium dense.

GROUNDWATER

Groundwater was not observed within the exploratory borings excavated to a depth of 16.5 feet.

INFILTRATION TESTING

The double ring infiltrometer test method was utilized to perform a total of five (5) infiltration tests on May 14 and 15, 2018 to evaluate near surface infiltration rates in order to estimate the amount of storm water runoff that can infiltrate into the onsite water quality treatment plan areas. The infiltration tests were performed in general accordance with the requirements of double ring infiltration testing, ASTM D3385 and Appendix A of the Riverside County Flood Control and Water Conservation District.

The infiltration tests were performed using double ring infiltrometer and Mariotte tubes at a depth of 5 feet below existing grades. The locations of the infiltration tests are indicated on the attached infiltration Location Map, Plate 1. The double ring infiltrometer tests were located by property boundary measurement on the site plan and by using geographic features. Infiltration test data recorded in the field are summarized in the following table and is included within Appendix B including the graph of Infiltration Rate versus Elapsed Time.

INFILTRATION TEST SUMMARY

TEST NUMBER	INFILTRATION HOLE DEPTH (ft.)	INFILTRATION RATE (in/hr)	DESCRIPTION
DR-1	5	1.08	Clayey SILT
DR-2	5	0.79	Clayey SILT
DR-3	5	0.0	Clayey SILT
DR-4	5	0.0	Clayey SILT
DR-5	5	0.0	Clayey SILT

The infiltration test rates were 0 inches per hour (in/hr).

CONCLUSIONS AND RECOMMENDATIONS

Based on the data presented in this report and the recommendations set forth herein, it is the opinion of Earth Strata that the water quality treatment areas can be designed for an in-situ infiltration rate of 0 inches per hour for the water quality treatment areas.

GRADING PLAN REVIEW AND CONSTRUCTION SERVICES

This report has been prepared for the exclusive use of **Ms. Carissa Hainsworth** and their authorized representative. It likely does not contain sufficient information for other parties or other uses. Earth Strata should be engaged to review the final design plans and specifications prior to construction. This is to verify that the recommendations contained in this report have been properly incorporated into the project plans and specifications. Should Earth Strata not be accorded the opportunity to review the project plans and specifications, we are not responsibility for misinterpretation of our recommendations.

Earth Strata should be retained to provide observations during construction to validate this report. In order to allow for design changes in the event that the subsurface conditions differ from those anticipated prior to construction.

Earth Strata should review any changes in the project and modify and approve in writing the conclusions and recommendations of this report. This report and the drawings contained within are intended for design input purposes only and are not intended to act as construction drawings or specifications. In the event that conditions encountered during grading or construction operations appear to be different than those indicated in this report, this office should be notified immediately, as revisions may be required.

REPORT LIMITATIONS

Our services were performed using the degree of care and skill ordinarily exercised, under similar circumstances, by reputable soils engineers and geologists, practicing at the time and location this report was prepared. No other warranty, expressed or implied, is made as to the conclusions and professional advice included in this report.

Earth materials vary in type, strength, and other geotechnical properties between points of observation and exploration. Groundwater and moisture conditions can also vary due to natural processes or the works of man on this or adjacent properties. As a result, we do not and cannot have complete knowledge of the subsurface conditions beneath the subject property. No practical study can completely eliminate uncertainty with regard to the anticipated geotechnical conditions in connection with a subject property.

The conclusions and recommendations within this report are based upon the findings at the points of observation and are subject to confirmation by Earth Strata during construction. This report is considered valid for a period of one year from the time the report was issued.

This report was prepared with the understanding that it is the responsibility of the owner or their representative, to ensure that the conclusions and recommendations contained herein are brought to the attention of the other project consultants and are incorporated into the plans and specifications. The owners' contractor should properly implement the conclusions and recommendations during grading and construction, and notify the owner if they consider any of the recommendations presented herein to be unsafe or unsuitable.

Respectfully submitted,

EARTH STRATA GEOTECHNICAL SERVICES

Stephen M. Poole, PE 40219
President
Principal Engineer

REGISTERED PROFESSIONAL ENGINEER
STEPHEN MICHAEL POOLE
No. 692
GEOTECHNICAL
STATE OF CALIFORNIA

SMP/jmr

Distribution: (1) Addressee

Attachments: Figure 1 – Vicinity Map *(Rear of Text)*
Appendix A – Exploratory Logs *(Rear of Text)*
Appendix B – Infiltration Test Sheets *(Rear of Text)*
Plate 1 – Infiltration Location Map *(Rear of Text)*

FIGURE 1

VICINITY MAP

APPENDIX A

EXPLORATORY LOGS

Geotechnical Boring Log B-6

Date: May 15, 2018	**Project Name: MR-DC** **Page: 6 of 12**
Project Number: 182161-10A	**Logged By: JF**
Drilling Company: Drilling It	**Type of Rig: B-61**
Drive Weight (lbs): 140	**Drop (in): 30** **Hole Diameter (in): 8**
Top of Hole Elevation (ft): See Map	**Hole Location: See Geotechnical Map**

Depth (ft)	Blow Count Per Foot	Sample Depth	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
0						**Quaternary Old Fan Deposits (Qof)**
	48	2.5'	109.8	11.3	SC	Clayey SAND; brown, slightly moist, dense, fine to coarse sand
5	76	5'	130.6	7.9		Very dense below 5 feet
	54	7.5'	117.7	10.7		
10	79	10'	119.5	9.6	SM	Silty SAND; reddish brown, dry, very dense, fine to coarse sand, trace clay
15	69	15'	120.0	7.8		Fine to medium sand below 15 feet
						Total Depth: 16.5 feet
						No Groundwater
20						
25						
30						

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Geotechnical Boring Log B-7

Date: May 15, 2018	**Project Name: MR-DC** **Page: 7 of 12**
Project Number: 182161-10A	**Logged By: JF**
Drilling Company: Drilling It	**Type of Rig: B-61**
Drive Weight (lbs): 140	**Drop (in): 30** **Hole Diameter (in): 8**
Top of Hole Elevation (ft): See Map	**Hole Location: See Geotechnical Map**

Depth (ft)	Blow Count Per Foot	Sample Depth	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
0						**Quaternary Old Fan Deposits (Qof)**
	50/4"	2.5'	92.7	4.0	SM	Silty SAND; brown, dry, dense dense, fine to coarse sand, trace clay
5	70/11"	5'	125.2	12.0		
	33	7.5'	125.6	7.3	SC	Clayey SAND; reddish brown, slightly moist, very dense, fine to coarse sand
10	72	10'	128.3	11.3		
15	45	15'	113.8	7.5		Dense below 15 feet
						Total Depth: 16.5 feet
						No Groundwater
20						
25						
30						

Geotechnical Boring Log B-8

Date: May 15, 2018	**Project Name: MR-DC** **Page: 8 of 12**
Project Number: 182161-10A	**Logged By: JF**
Drilling Company: Drilling It	**Type of Rig: B-61**
Drive Weight (lbs): 140	**Drop (in): 30** **Hole Diameter (in): 8**
Top of Hole Elevation (ft): See Map	**Hole Location: See Geotechnical Map**

Depth (ft)	Blow Count Per Foot	Sample Depth	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
0						**Quaternary Old Fan Deposits (Qof)**
	91/11"	2.5'	107.4	8.8	SM	Silty SAND; reddish brown, slightly moist, very dense, fine to medium sand, trace clay
5	52	5'	118.8	11.2		
	68	7.5'	111.0	16.1		
10	76	10'	109.7	16.1		Strong brown, moist, below 10 feet
15	81/11"	15'	108.2	13.8		
						Total Depth: 16.5 feet
						No Groundwater
20						
25						
30						

Geotechnical Boring Log B-9

Date: May 15, 2018	**Project Name: MR-DC** **Page: 9 of 12**
Project Number: 182161-10A	**Logged By: JF**
Drilling Company: Drilling It	**Type of Rig: B-61**
Drive Weight (lbs): 140	**Drop (in): 30** **Hole Diameter (in): 8**
Top of Hole Elevation (ft): See Map	**Hole Location: See Geotechnical Map**

Depth (ft)	Blow Count Per Foot	Sample Depth	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
0						**Quaternary Old Fan Deposits (Qof)**
	50/4"	2.5'	114.0	5.1	SM	Silty SAND; strong brown, dry, very dense, fine to medium sand
5	51	5'	119.4	7.4	ML	Sandy SILT; reddish brown, dry, stiff, fine to medium sand
	81/11"	7.5'	123.7	13.2		
10	64	10'	92.8	26.6		
15	60	15'	96.5	27.4		Strong brown below 15 feet
						Total Depth: 16.5 feet
						No Groundwater
20						
25						
30						

Geotechnical Boring Log B-10

Date: May 18, 2018	**Project Name: MR-DC** **Page: 10 of 12**
Project Number: 182161-10A	**Logged By: JF**
Drilling Company: Drilling It	**Type of Rig: B-61**
Drive Weight (lbs): 140	**Drop (in): 30** **Hole Diameter (in): 8**
Top of Hole Elevation (ft): See Map	**Hole Location: See Geotechnical Map**

Depth (ft)	Blow Count Per Foot	Sample Depth	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
0						**Quaternary Old Alluvial Deposits (Qof)**
					SM	Silty SAND; reddish brown, dry, very dense, fine to medium sand w/ trace
	70/5"	2.5'				CLAY
5	70/5"	5'				
	70/5"	7.5'				
10	67/6"	10'				
						Total Depth: 11.5 feet
						No Groundwater
15						
20						
25						
30						

Geotechnical Boring Log B-11

Date: May 18, 2018	**Project Name: MR-DC** **Page: 11 of 12**
Project Number: 182161-10A	**Logged By: JF**
Drilling Company: Drilling It	**Type of Rig: B-61**
Drive Weight (lbs): 140	**Drop (in): 30** **Hole Diameter (in): 8**
Top of Hole Elevation (ft): See Map	**Hole Location: See Geotechnical Map**

Depth (ft)	Blow Count Per Foot	Sample Depth	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
0						**Quaternary Old Alluvial Fan Deosits (Qof):**
					SC	Clayey SAND; strong brown, moist, very dense, fine to medium sand
	47	2.5'				
5	70					
	70/4"					
10	70/5"					
						Total Depth: 11 feet
						No Groundwater
15						
20						
25						
30						

Geotechnical Boring Log B-12

Date: May 18, 2018	**Project Name: MR-DC** **Page: 12 of 12**
Project Number: 182161-10A	**Logged By: JF**
Drilling Company: Drilling It	**Type of Rig: Simco 28w**
Drive Weight (lbs): 140	**Drop (in): 30** **Hole Diameter (in): 8**
Top of Hole Elevation (ft): See Map	**Hole Location: See Geotechnical Map**

Depth (ft)	Blow Count Per Foot	Sample Depth	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
0						**Quarternary Old Alluvial Fan Deposits (Qof):**
					SM	Silty SAND; reddish brown, dry, very dense, fine to meduium sand with trace clay
	70/4"					
5	30,40					
	70/4"					
						Total Depth: 8 feet
10						No Groundwater
15						
20						
25						
30						

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APPENDIX B

INFILTRATION TEST SHEETS

Turf-Tec International - Record Chart for IN10-W - (12 & 24 Inch Infiltration Rings)

Test No.	DR-1	Location	See Map

Project Identification:	182161-12B	Constants	Area cm2	Depth of Liquid (cm)	Liquid Container Number		Marriotte Tube Volume
Test Location:	DR-1	Inner Ring	729	10.0	1		3000
Liquid Used:	TAP WATE pH: 8.0	Annular Ring	2189	10.0	2		10000
Tested By:	HR	Date	5/14/2018				
Depth to water table:	> 30 Feet	Depth of Test	6.5				

Liquid level maintained (X) Flow Valve ( ) Float Valve ( ) Mariotte Tubes

Penetration Depth of Outer Ring: 9 cm | Other

Trial #	Start / End	Date MM/DD/YY	Time HR:MIN	Time Increment /(Total)	Elapsed Time (Min)	Flow Readings: Inner Ring Reading cm	Inner Maroitte Tube Flow (ml)	Annular Space Reading cm	Annular Space Marriotte Tube Flow (ml)	Liquid Temp ºF	Infiltration Rates: Inner Infiltration Rate cm/h	Inner Infiltration Rate In/h	Annular Infiltration Rate cm/h	Annular Infiltration Rate cm/h	Ground Temperature: Ground Temp Depth (cm)	Temp at Depth (c)	Remarks: Weather conditions Etc...
	Start Test	5/14/2018	3:00	0:30	30												
1	End Test	5/14/2018	3:30	0:30		6.00	600	6.00	3000		1.65	**0.65**	2.74	**1.08**			
	Start Test	5/14/2018	3:30	0:30	60												
2	End Test	5/14/2018	4:00	1:00		6.00	800	6.00	3500		2.19	**0.86**	3.20	**1.26**			
	Start Test	5/14/2018	4:30	0:00	60												
3	End Test	5/14/2018	4:30	1:00		6.00	1000	6.00	3000		#DIV/0!	**#DIV/0!**	#DIV/0!	**#DIV/0!**			
	Start Test	5/14/2018	4:30	0:30	90												
4	End Test	5/14/2018	5:00	1:30		6.00	750	6.00	3000		2.06	**0.81**	2.74	**1.08**			
	Start Test	5/14/2018	5:00	0:30	120												
5	End Test	5/14/2018	5:30	2:00		6.00	800	6.00	3500		2.19	**0.86**	3.20	**1.26**			
	Start Test	5/14/2018	5:30	0:30	150												
6	End Test	5/14/2018	6:00	2:30		6.00	1000	6.00	3000		2.74	**1.08**	2.74	**1.08**			

Project Identification:	182161-12B		
Test Location:	DR-1		
Liquid Used:	TAP WATE	**pH:**	8.0
Tested By:	HR		
Depth to water table:	> 30 Feet		

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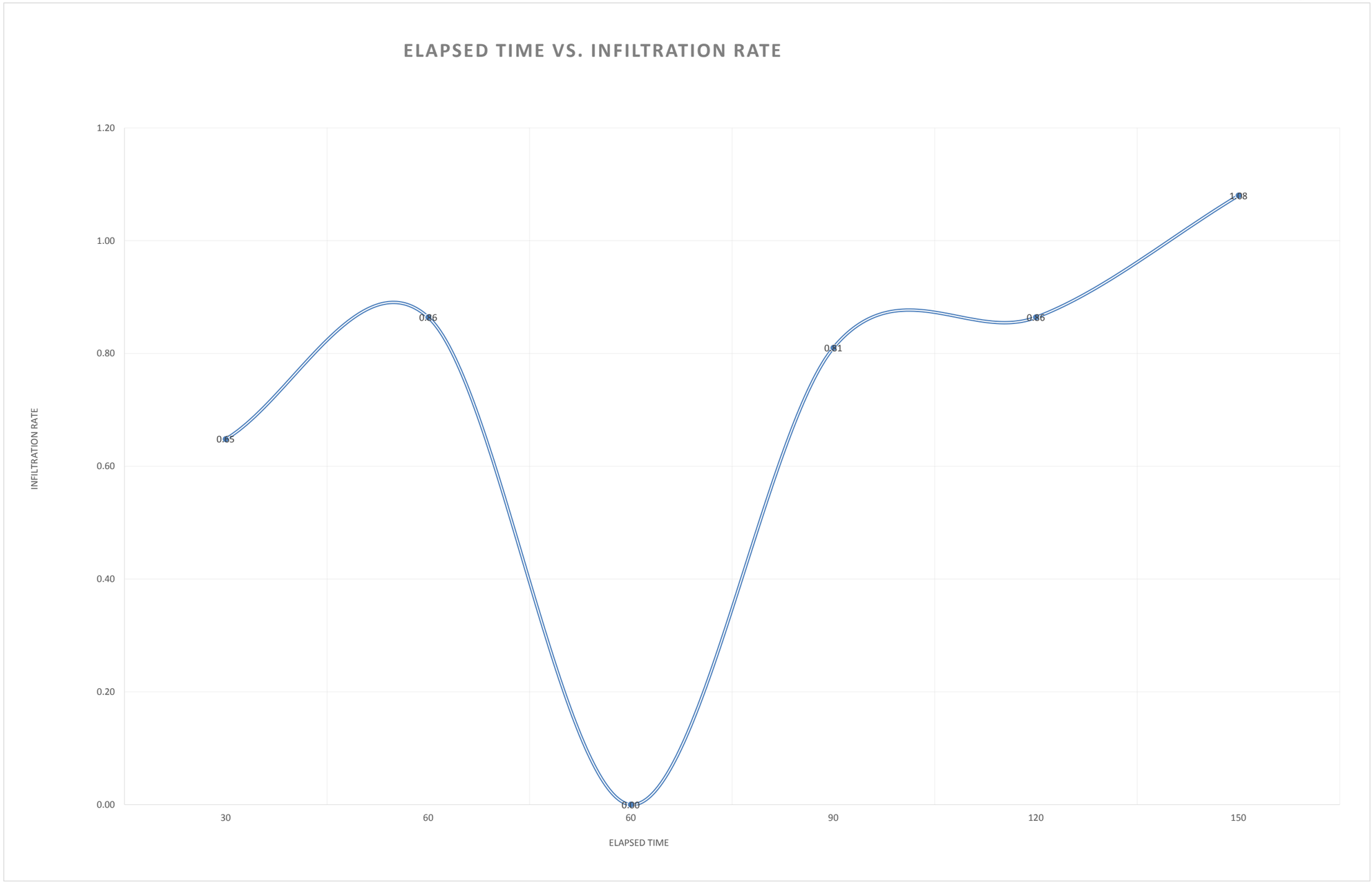

Turf-Tec International - Record Chart for IN10-W - (12 & 24 Inch Infiltration Rings)

Test No.	DR-2	Location	See Map

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					Constants	Area cm2	Depth of Liquid (cm)	Liquid Container Number		Marriotte Tube Volume
Project Identification:	182161-12B									
Test Location:	DR-1				Inner Ring	729	10.0	1		3000
Liquid Used:	TAP WATE	pH:	8.0		Annular Ring	2189	10.0	2		10000
Tested By:	HR		Date	5/14/2018		Liquid level maintained	(X) Flow Valve	( ) Float Valve	( ) Mariotte Tubes	
Depth to water table:	> 30 Feet		Depth of Test	6.5		Penetration Depth of Outer Ring:	9 cm		Other	

Trial #	Start / End	Date MM/DD/YY	Time HR:MIN	Time Increment /(Total)	Elapsed Time (Min)	Flow Readings: Inner Ring Reading cm	Inner Maroitte Tube Flow (ml)	Annular Space Reading cm	Annular Space Marriotte Tube Flow (ml)	Liquid Temp ºF	Infiltration Rates: Inner Infiltration Rate cm/h	Inner Infiltration Rate In/h	Annular Infiltration Rate cm/h	Annular Infiltration Rate cm/h	Ground Temperature: Ground Temp Depth (cm)	Temp at Depth (c)	Remarks: Weather conditions Etc...
1	Start Test	5/14/2018	3:10	0:30	30												
	End Test	5/14/2018	3:40	0:30		6.00	0	6.00	0		0.00	**0.00**	0.00	**0.00**			
2	Start Test	5/14/2018	3:40	0:30	60												
	End Test	5/14/2018	4:10	1:00		6.00	0	6.00	0		0.00	**0.00**	0.00	**0.00**			
3	Start Test	5/14/2018	4:10	0:30	90												
	End Test	5/14/2018	4:40	1:30		6.00	0	6.00	0		0.00	**0.00**	0.00	**0.00**			
4	Start Test	5/14/2018	4:40	0:30	120												
	End Test	5/14/2018	5:10	2:00		6.00	500	6.00	1500		1.37	**0.54**	1.37	**0.54**			
5	Start Test	5/14/2018	5:10	0:30	150												
	End Test	5/14/2018	5:40	2:30		6.00	750	6.00	2000		2.06	**0.81**	1.83	**0.72**			
6	Start Test	5/14/2018	5:40	0:30	180												
	End Test	5/14/2018	6:10	3:00		6.00	750	6.00	2200		2.06	**0.81**	2.01	**0.79**			

Turf-Tec International

Project Identification:	182161-12B		
Test Location:	DR-1		
Liquid Used:	TAP WATE	**pH:**	8.0
Tested By:	HR		
Depth to water table:	> 30 Feet		

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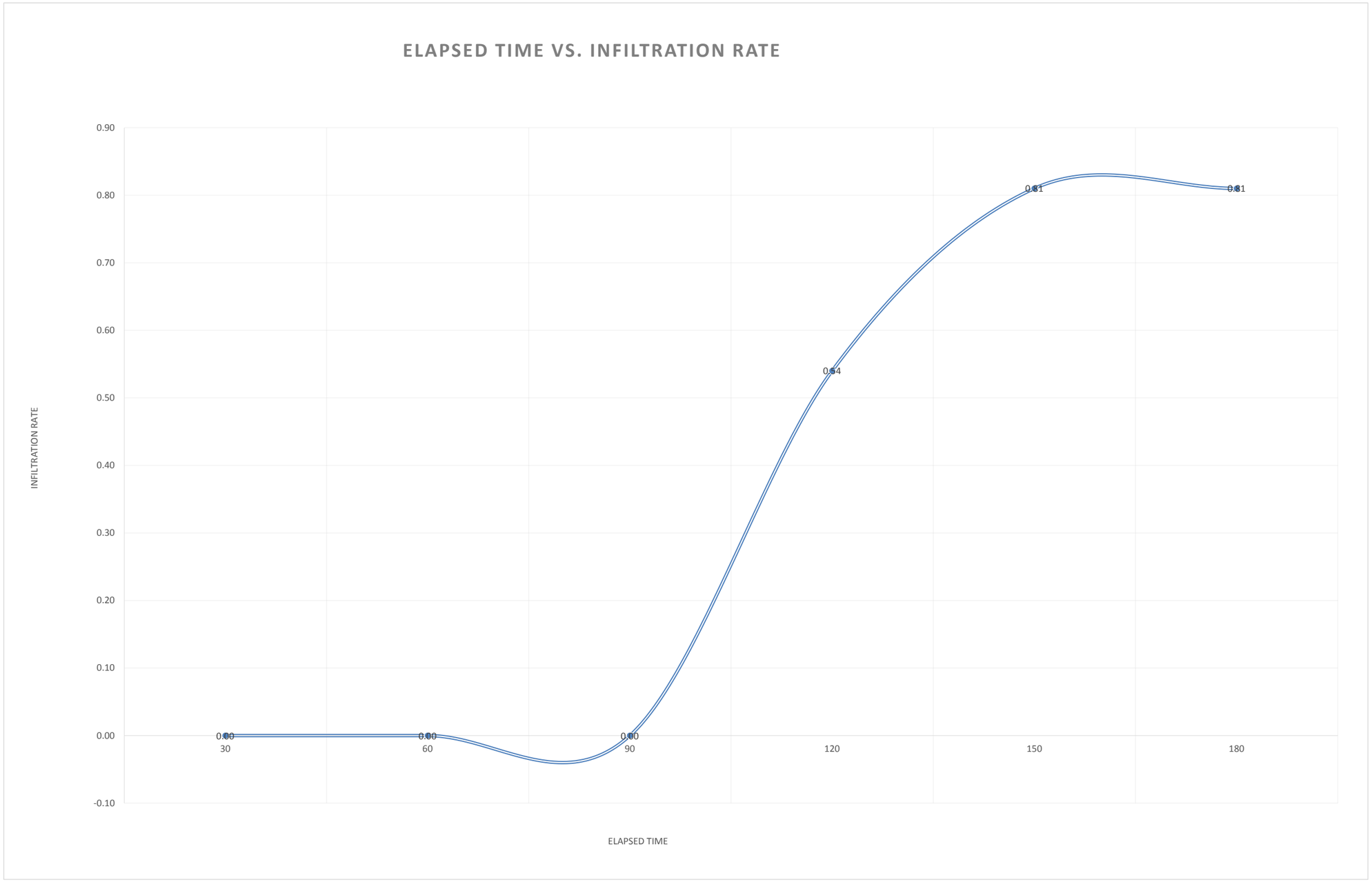

Turf-Tec International - Record Chart for IN10-W - (12 & 24 Inch Infiltration Rings)

Test No.	DR-3	Location	See Map

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Project Identification:	182161-12B					**Constants**	**Area cm2**	**Depth of Liquid (cm)**	**Liquid Container Number**		**Marriotte Tube Volume**	
Test Location:	DR-1					**Inner Ring**	729	10.0	1		3000	
Liquid Used:	TAP WATE	**pH:**	8.0			**Annular Ring**	2189	10.0	2		10000	
Tested By:	HR		**Date**	5/15/2018		**Liquid level maintained**	(X) Flow Valve	( ) Float Valve	( ) Mariotte Tubes			
Depth to water table:	> 30 Feet		**Depth of Test**	6.5		**Penetration Depth of Outer Ring:**	9 cm		**Other**			

Trial #	Start / End	Date MM/DD/YY	Time HR:MIN	Time Increment /(Total)	Elapsed Time (Min)	Flow Readings: Inner Ring Reading cm	Flow Readings: Inner Maroitte Tube Flow (ml)	Flow Readings: Annular Space Reading cm	Flow Readings: Annular Space Marriotte Tube Flow (ml)	Liquid Temp ºF	Infiltration Rates: Inner Infiltration Rate cm/h	Infiltration Rates: Inner Infiltration Rate In/h	Infiltration Rates: Annular Infiltration Rate cm/h	Infiltration Rates: Annular Infiltration Rate cm/h	Ground Temperature: Ground Temp Depth (cm)	Ground Temperature: Temp at Depth (c)	Remarks: Weather conditions Etc...
1	Start Test	5/15/2018	12:25	0:30	30												
	End Test	5/15/2018	12:55	0:30		6.00	0	6.00	0		0.00	**0.00**	0.00	**0.00**			
2	Start Test	5/15/2018	12:55	0:30	60												
	End Test	5/15/2018	13:25	1:00		6.00	0	6.00	0		0.00	**0.00**	0.00	**0.00**			
3	Start Test	5/15/2018	13:25	0:30	90												
	End Test	5/15/2018	13:55	1:30		6.00	0	6.00	0		0.00	**0.00**	0.00	**0.00**			
4	Start Test	5/15/2018	13:55	0:30	120												
	End Test	5/15/2018	14:25	2:00		6.00	0	6.00	0		0.00	**0.00**	0.00	**0.00**			
5	Start Test	5/15/2018	14:25	0:30	150												
	End Test	5/15/2018	14:55	2:30		6.00	0	6.00	0		0.00	**0.00**	0.00	**0.00**			
6	Start Test	5/15/2018	14:55	0:30	180												
	End Test	5/15/2018	15:25	3:00		6.00	0	6.00	0		0.00	**0.00**	0.00	**0.00**			

Turf-Tec International

Project Identification:	182161-12B		
Test Location:	DR-1		
Liquid Used:	TAP WATE	**pH:**	8.0
Tested By:	HR		
Depth to water table:	> 30 Feet		

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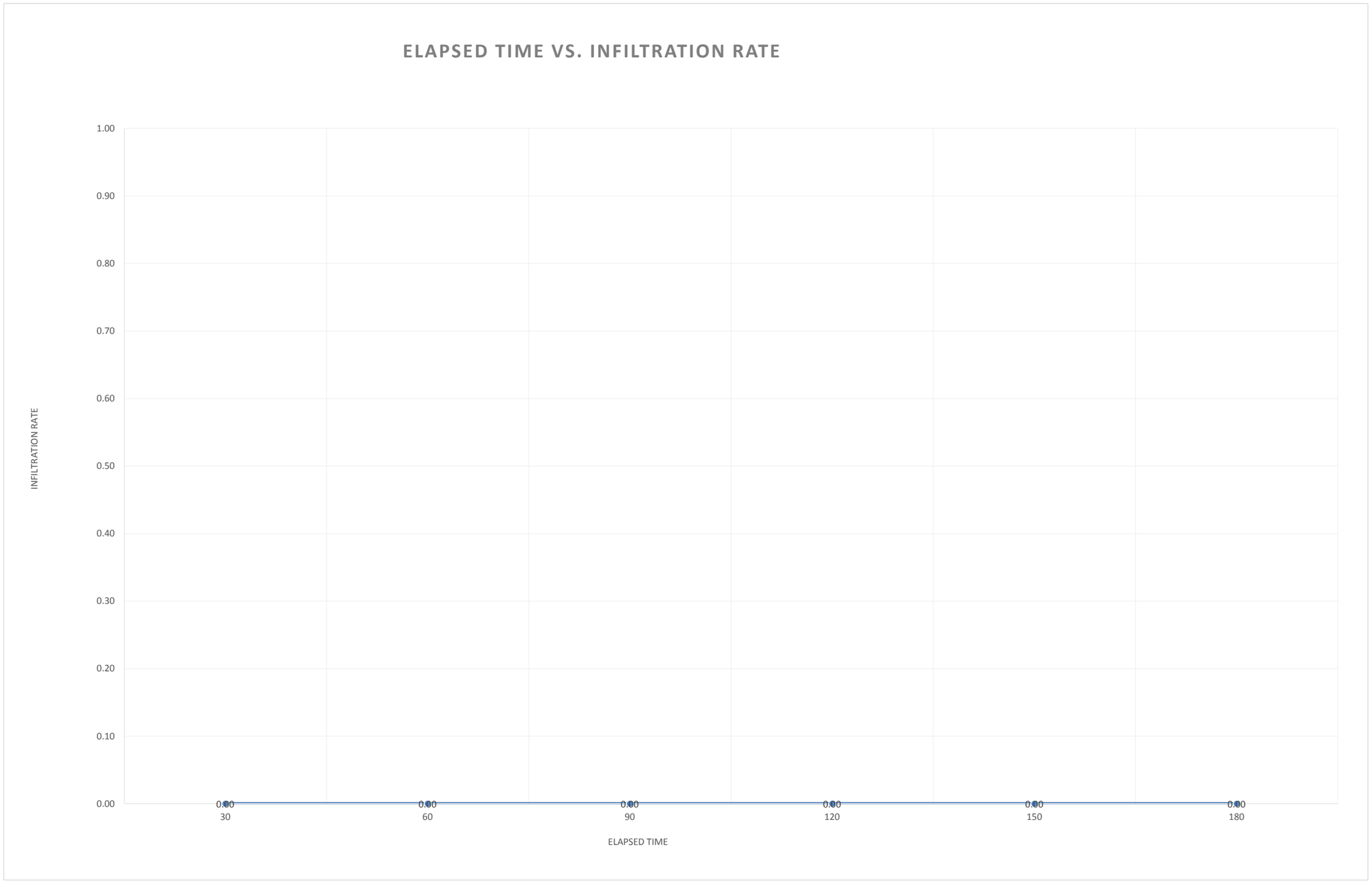

Test No.	DR-4	Location	See Map	Turf-Tec International - Record Chart for IN10-W - (12 & 24 Inch Infiltration Rings)

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Project Identification:	182161-12B				**Constants**	**Area cm2**	**Depth of Liquid (cm)**	**Liquid Container Number**		**Marriotte Tube Volume**	
Test Location:	DR-1				**Inner Ring**	729	10.0	1		3000	
Liquid Used:	TAP WATE	**pH:**	8.0		**Annular Ring**	2189	10.0	2		10000	
Tested By:	HR		**Date**	5/15/2018	**Liquid level maintained**	(X) Flow Valve	( ) Float Valve	( ) Mariotte Tubes			
Depth to water table:	> 30 Feet		**Depth of Test**	6.5	**Penetration Depth of Outer Ring:**	9 cm		**Other**			

Trial #	Start / End	Date MM/DD/YY	Time HR:MIN	Time Increment /(Total)	Elapsed Time (Min)	Flow Readings: Inner Ring Reading cm	Flow Readings: Inner Maroitte Tube Flow (ml)	Flow Readings: Annular Space Reading cm	Flow Readings: Annular Space Marriotte Tube Flow (ml)	Liquid Temp ºF	Infiltration Rates: Inner Infiltration Rate cm/h	Infiltration Rates: Inner Infiltration Rate In/h	Infiltration Rates: Annular Infiltration Rate cm/h	Infiltration Rates: Annular Infiltration Rate cm/h	Ground Temperature: Ground Temp Depth (cm)	Ground Temperature: Temp at Depth (c)	Remarks: Weather conditions Etc...
1	Start Test	5/15/2018	12:45	0:30	30												
	End Test	5/15/2018	13:15	0:30		6.00	0	6.00	0		0.00	**0.00**	0.00	**0.00**			
2	Start Test	5/15/2018	13:15	0:30	60												
	End Test	5/15/2018	13:45	1:00		6.00	0	6.00	0		0.00	**0.00**	0.00	**0.00**			
3	Start Test	5/15/2018	13:45	0:30	90												
	End Test	5/15/2018	14:15	1:30		6.00	0	6.00	0		0.00	**0.00**	0.00	**0.00**			
4	Start Test	5/15/2018	14:15	0:30	120												
	End Test	5/15/2018	14:45	2:00		6.00	0	6.00	0		0.00	**0.00**	0.00	**0.00**			
5	Start Test	5/15/2018	14:45	0:30	150												
	End Test	5/15/2018	15:15	2:30		6.00	0	6.00	0		0.00	**0.00**	0.00	**0.00**			
6	Start Test	5/15/2018	15:15	0:30	180												
	End Test	5/15/2018	15:45	3:00		6.00	0	6.00	0		0.00	**0.00**	0.00	**0.00**			

Turf-Tec International

Project Identification:	182161-12B		
Test Location:	DR-1		
Liquid Used:	TAP WATE	**pH:**	8.0
Tested By:	HR		
Depth to water table:	> 30 Feet		

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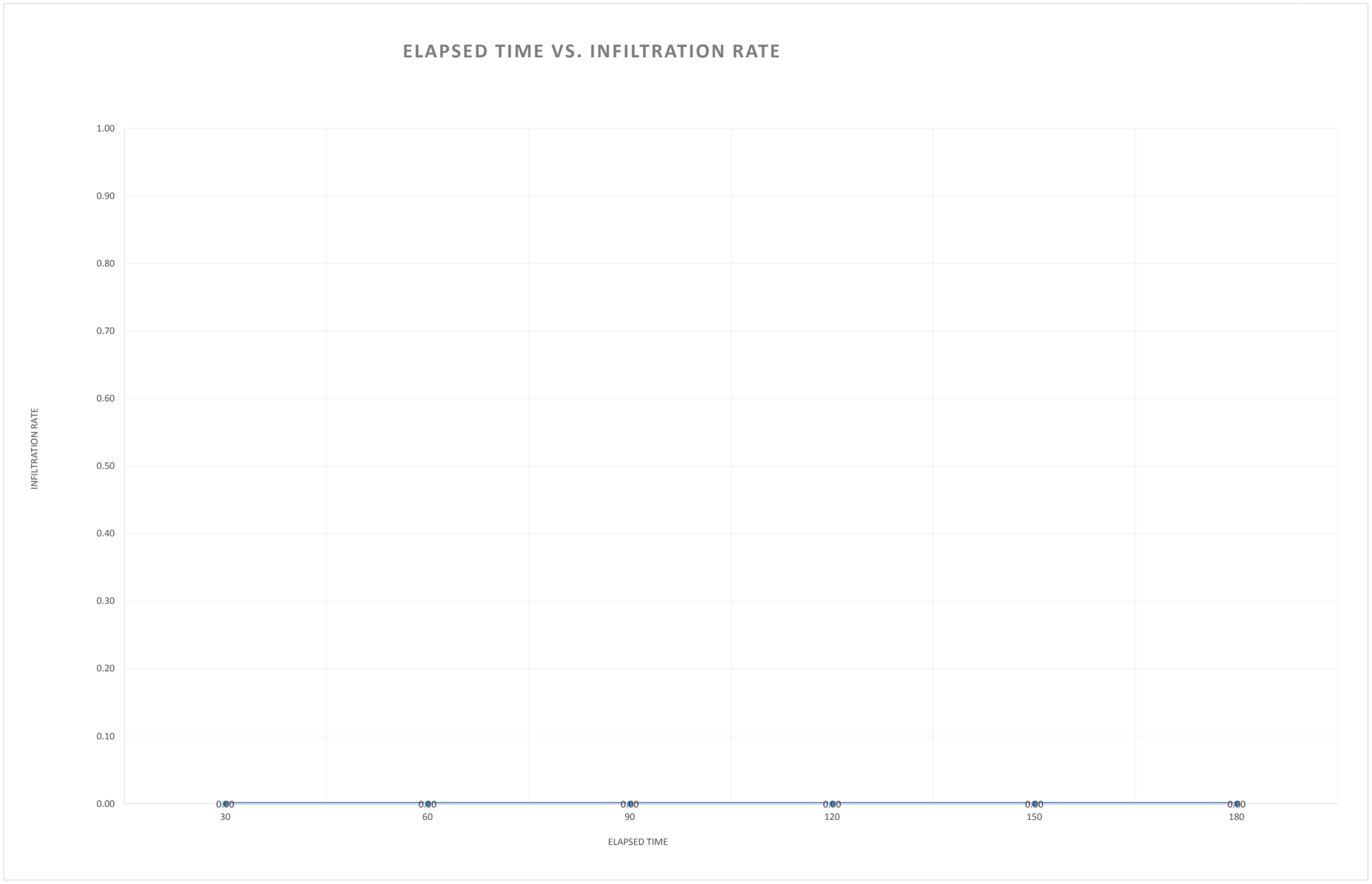

Test No.	DR-5	Location	See Map	Turf-Tec International - Record Chart for IN10-W - (12 & 24 Inch Infiltration Rings)

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Project Identification:	182161-12B				**Constants**	**Area cm2**	**Depth of Liquid (cm)**	**Liquid Container Number**		**Marriotte Tube Volume**	
Test Location:	DR-1				**Inner Ring**	729	10.0	1		3000	
Liquid Used:	TAP WATE	**pH:**	8.0		**Annular Ring**	2189	10.0	2		10000	
Tested By:	HR		**Date**	5/15/2018	**Liquid level maintained**	(X) Flow Valve	( ) Float Valve	( ) Mariotte Tubes			
Depth to water table:	> 30 Feet		**Depth of Test**	6.5	**Penetration Depth of Outer Ring:**	9 cm		**Other**			

Trial #	Start / End	Date MM/DD/YY	Time HR:MIN	Time Increment /(Total)	Elapsed Time (Min)	Flow Readings				Liquid Temp ºF	Infiltration Rates				Ground Temperature		Remarks
						Inner Ring Reading cm	Inner Maroitte Tube Flow (ml)	Annular Space Reading cm	Annular Space Marriotte Tube Flow (ml)		Inner Infiltration Rate cm/h	Inner Infiltration Rate In/h	Annular Infiltration Rate cm/h	Annular Infiltration Rate cm/h	Ground Temp Depth (cm)	Temp at Depth (c)	Weather conditions Etc...
1	Start Test	5/15/2018	11:30	0:30	30												
	End Test	5/15/2018	12:00	0:30		6.00	0	6.00	0		0.00	**0.00**	0.00	**0.00**			
2	Start Test	5/15/2018	12:00	0:30	60												
	End Test	5/15/2018	12:30	1:00		6.00	0	6.00	0		0.00	**0.00**	0.00	**0.00**			
3	Start Test	5/15/2018	12:30	0:30	90												
	End Test	5/15/2018	13:00	1:30		6.00	0	6.00	0		0.00	**0.00**	0.00	**0.00**			
4	Start Test	5/15/2018	13:00	0:30	120												
	End Test	5/15/2018	13:30	2:00		6.00	0	6.00	0		0.00	**0.00**	0.00	**0.00**			

Turf-Tec International

Project Identification:	182161-12B		
Test Location:	DR-1		
Liquid Used:	TAP WATE	**pH:**	8.0
Tested By:	HR		
Depth to water table:	> 30 Feet		

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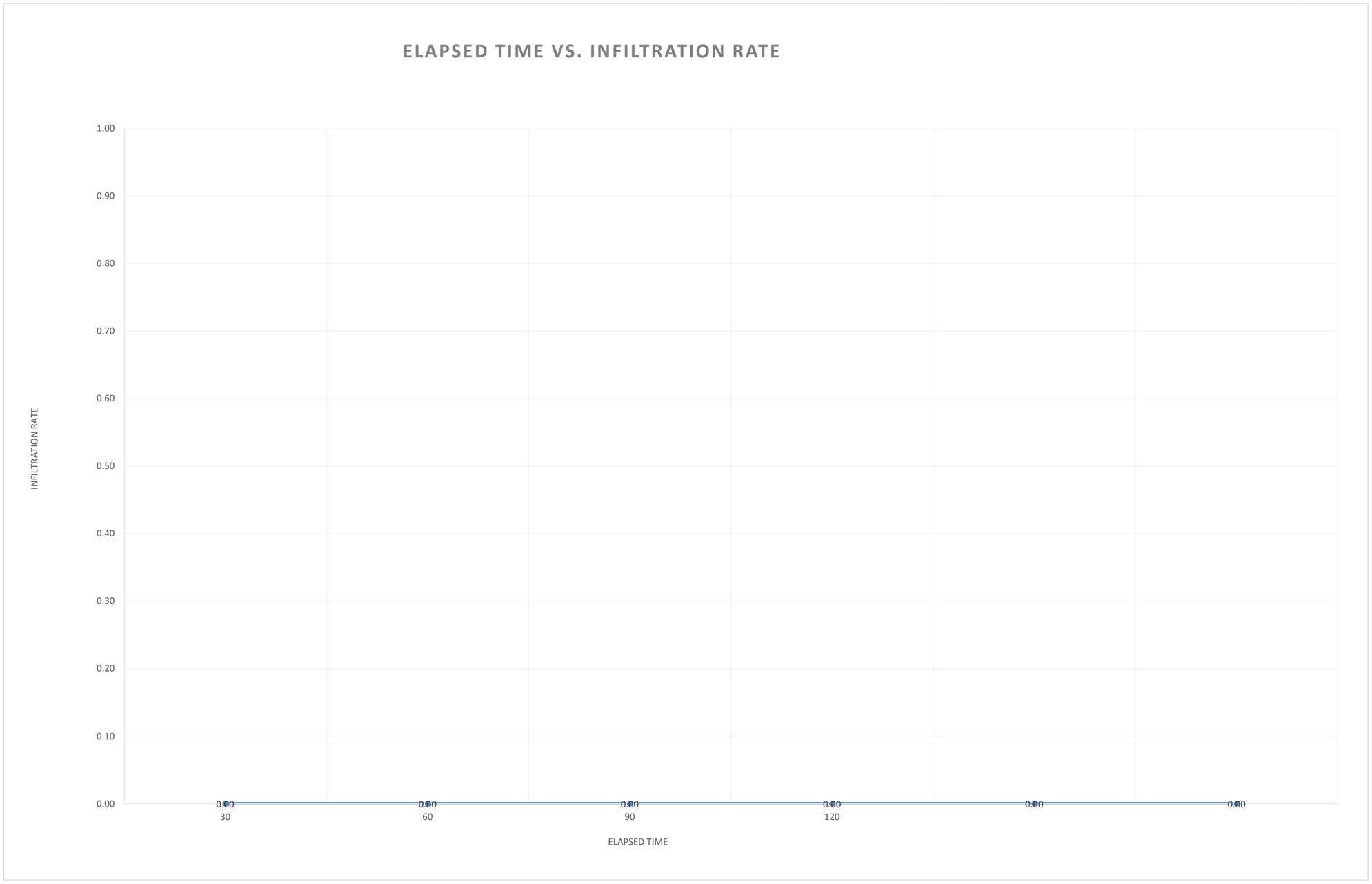

Appendix 4: Historical Site Conditions

Phase I Environmental Site Assessment or Other Information on Past Site Use

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PHASE I ENVIRONMENTAL SITE ASSESSMENT

Of

AGRICULTURAL PROPERTY
ASSESSOR'S PARCEL NUMBERS
331-110-027, 331-110-035, 331-110-041,
331-140-010 AND 331-140-025
MENIFEE, CALIFORNIA 92585

Prepared for:

Mrs. Carissa Hainsworth
Mike Naggar and Asociates
445 South D Street
Perris, California 92570

Prepared by:

Earth Strata Geotechnical Services
42184 Remington Avenue
Temecula, California 92590
(951) 461-4028
www.earth-strata.com
E-S Project #P182161-60A

Issue Date: May 4, 2018

TABLE OF CONTENTS

Appendices:

A. Site Maps and Site Photographs
B. Aerial Photo Decade Report
C. Regulatory Database Search and Radius Map Report
D. File Review Information
E. Site Questionnaire

PHASE I ESA EXECUTIVE SUMMARY OVERVIEW Agricultural Property Menefee, CA				
Section Topic	**No RECs Identified**	**Non-REC Issue Identified**	**RECs Identified**	**Comments**
Historical Usage		✔		Historical Dry Farming Agriculture Usage
Regulatory Database Review (on-site)	✔			
Regulatory Database Review (nearby sites)	✔			
On-site Operations	✔			
Haz. Mat. Handling	✔			
Haz. Waste Handling	✔			
USTs/ ASTs	✔			
ACMs	✔			
LBP	✔			
PCBs	✔			
Radon	✔			
Other	✔			

SECTION I.
EXECUTIVE SUMMARY & RECOMMENDATIONS

Earth Strata Geotechnical Services, (E-S) was retained by Mrs. Carissa Hainsworth, to perform a Phase I Environmental Site Assessment (Phase I ESA or Assessment) of a site located east of Trumble Road, north of McLaughlin Road and west of Dawson Road, in Menifee, California. At the time of the April 30, 2018 site visit, the subject property consisted of five undeveloped parcels, totaling approximately 76.38 Acres. The subject site is located within a mixed-use area.

This Phase I ESA was performed in accordance with the scope and limitations of the *American Society for Testing and Materials (ASTM) Phase I ESA Standard E1527-2013,* (Equivalent to the USEPA's All Appropriate Inquiry [AAI] Standard), the scope of work defined in this report, as well as the signed service agreement. The following summarizes E-S's independent conclusions and best professional judgment based upon information available to us at the time of this Assessment.

During the site visit, the E-S Assessor was not accompanied by anyone, because the site is undeveloped and is vacant land. Due to the site being undeveloped and vacant the "Key Site Manager" was identified as Mrs. Carissa Hainsworth. As defined by ASTM E1527-2013, the Key Site Manager is that person having good knowledge of the uses and physical characteristics of the subject property, and in a position to provide reasonably accurate information for the Key Site Manager Environmental Questionnaire. The questioner was performed by E-S and can be found in Appendix F. Based upon the limited site reconnaissance, historical review, regulatory records review, and other information detailed within this report; this Assessment did not identify any evidence of ASTM Recognized Environmental Conditions (RECs) or other issues in connection with the subject property.

RECOMMENDATIONS

Based on the results of this Phase I ESA, no further investigation is recommended for this site. Although some agricultural use has may have been identified, this area is known for dry farming or "dry-land grain farmed" since the 1800's.

An Executive Summary Overview is also included in the previous section. However, when making any decisions concerning the findings of this Assessment, please also refer to the entirety of this report, which may present other items of interest that are not discussed in the Executive Summary, or further details regarding the above items. In addition, please refer to the Data Gaps section (IV-H) of this report regarding information that may have been unavailable or incomplete which may have a bearing on the findings or usage of this report.

SECTION II.
SCOPE OF WORK & LIMITATIONS

PURPOSE

The primary goal of this Phase I Environmental Site Assessment is to assist the client in satisfying one of the requirements to qualify for the "innocent landowner, contiguous property owner, or bona fide prospective purchaser limitations on CERCLA liability" (42 U.S.C. § 9601 et. seq.). Qualification for these limitations is predicated on the assumption that "…the defendant must have undertaken, at the time of acquisition, all appropriate inquiry into the previous ownership and uses of the property consistent with good commercial or customary practice in an effort to minimize liability…." The secondary goal of this Assessment is to provide information that will assist in evaluating the risk of potential significant value impairment of the security interest due to environmental impacts.

PROTOCOL

The *American Society for Testing and Materials (ASTM) Phase I ESA Standard E1527-2013* is the most current method used in attempting to perform the due diligence required to achieve the above purpose. The E1527-2013 Standard was created by the ASTM "…in an effort to define good commercial and customary practice in the United States of America for conducting an environmental site assessment.…" and is equivalent to the USEPA's All Appropriate Inquiry [AAI] Standard issued November 1, 2013. The ASTM Standard E1527-2013 is intended to identify recognized environmental conditions (RECs) in connection with a given property. The term recognized environmental conditions is not intended to include "*de minimus*" conditions that generally do not present a material risk of harm or that are unlikely to be the subject of enforcement actions by governmental agencies. Other conditions or issues that are beyond the ASTM scope may also be discussed in this report, as detailed within each section.

SCOPE OF WORK

Utilizing ASTM Standard E1527-2013, as well as the scope of work discussed below and in the work authorization document, this Assessment involved: A site reconnaissance of the subject property, limited observations of adjoining properties, a review of the historical usage of the subject property, and a review of relevant documentation provided by various public and private sources (including the client and/or owner of the subject property) to identify conditions indicative of releases or threatened releases of hazardous substances, as defined in CERCLA Section 101 (14) U.S.C. § 312.1(c) evaluate the presence or likely existence of:

- Recognized environmental conditions, specified by ASTM E1527-2013 as: "the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products

into structures on the property or into the ground, groundwater or surface water of the property."

- A brief evaluation and assessment of potential environmental issues which may not rise to the level of recognized environmental conditions, such as: obviously improper hazardous material or waste handling, suspect asbestos-containing materials, lead-based paint, polychlorinated bi-phenyls, and radon gas.

LIMITATIONS

As discussed in ASTM E1527-2013, no Phase I ESA can completely eliminate uncertainty regarding the potential for RECs in connection with a subject property. This investigation is simply intended to reduce uncertainty within reasonable limits of time and cost.

Refer to Section VI-A for a brief discussion of some (but not necessarily all) specific limitations to E-S's subject property observations at the time of the site visit. The observations contained within this Assessment are based upon conditions readily observable during the site visit. These observations are typically unable to address conditions of areas not inspected, hidden from view, subsurface soil, groundwater, underground storage tanks, neighboring properties, and the like, unless specifically mentioned. It is not the purpose of this Assessment to determine the actual presence, or degree or extent of contamination (if any) at the subject property. Unless specifically noted within this report, this Assessment does not include observations, testing, coring, or sampling analysis to address groundwater, soil, or extraneous materials contamination (including mold, bio-hazardous or radiologic issues) in or on the subject property. E-S also is not providing geological interpretations or recommendations. Potential Vapor Intrusion issues from on or off-site sources are not evaluated. Electromagnetic issues (e.g., proximity to high-voltage power lines) are also not included. This Assessment does not include or address reasonably ascertainable environmental liens recorded against the subject property, unless stated.

E-S makes no warranties or guarantees as to the accuracy or completeness of information obtained from or compiled by others. Information may also exist which was beyond the scope of this investigation, or was not provided to E-S that may have an impact on the conclusions of this Assessment. This Assessment does not attempt to address past or forecast future site conditions. E-S also cannot forecast or be responsible for changes in regulatory guidelines or protocols, industry standards or the like, which may affect the conclusions and/or future usage of this report.

This Assessment has been conducted and prepared in accordance with generally accepted practices and procedures exercised by reputable professionals under similar circumstances. E-S makes no other warranties or guarantees, either expressed or implied, as to the findings, opinions, or recommendations contained in the report, or as to the existence or non-existence of RECs or other issues at the subject property.

SECTION III.
GENERAL SITE DESCRIPTION

Earth Strata Geotechnical Services, (E-S) performed a Phase I Environmental Site Assessment (Phase I ESA or Assessment) of a site located east of Trumble Road, north of McLaughlin Road and west of Dawson Road, in Menifee, California. At the time of the April 30, 2018 site visit, the subject property consisted of four undeveloped parcels, totaling approximately 76.38 Acres. The subject site is located within a mixed-use area.

During the site visit, the property has one small manufactured home with a garage (26340 Trumble Road) surrounded by tilled fields. Power lines are located along Sherman Road and one pole mounted transformer was observed. EMWD and Riverside County Flood Control border the property to the south. The subject property location and pictures are shown on various Figures in Appendix A.

Exceptions to ASTM E 1527-05

A key site manager was not interviewed because the subject site is mostly uninhabited except for the small residential parcel at 26340 Trumble Road, where the assessor spoke to Alejandro Soberanes (occupant). The majority of the site is undeveloped and non-populated usage of the site was also established through other data sources in the report. No regulatory violations were identified for the subject site or the adjoining properties in the EDR database, and recognized environmental conditions were not observed during the visual survey.

A. CLIENT PROVIDED INFORMATION

As discussed in ASTM E1527-2013, the user (e.g., Client) is required to perform certain tasks or provide certain information to E-S in order to identify potential RECs. Tasks or information to be provided by the Client include: 1) review of judicial and title records for environmental liens, environmental deed restrictions or activity and use limitations (AULs); 2) provide specialized, actual, commonly known or reasonably ascertainable knowledge regarding the property; and, 3) identify reasons for a significantly lower purchase price (if applicable). The client has not provided any other information.

B. ADJOINING AND ADJACENT PROPERTIES

As discussed in ASTM E1527-2013, an adjoining property is any real property whose border is contiguous or partially contiguous with the subject property, or would be if the properties were not separated by a roadway, street or other public thoroughfare. For the purposes of this report, an adjacent property is any real property located within approximately one block or less of the subject property's border.

Specifically, the subject property is bordered by the following:

North: Immediately by residential properties and a sand / gravel pit mining property.

East: Immediately by vacant and commercial properties.

South: Immediately by Riverside County Flood Control channel.

West: Immediately by Trumble Road and vacant undeveloped properties.

C. USGS TOPOGRAPHIC MAP

The subject property's physical setting was researched employing a United States Geological Survey (USGS) 7.5 Minute Topographic Quadrangle (Quad) Map relevant to the subject property. The USGS 7.5 Minute Quad Map has an approximate scale of 1 inch to 2,000 feet, and shows physical features such as wetlands, roadways, mines, and buildings. The USGS 7.5 Minute Quad Map was used as the Standard Physical Setting Source, and is sufficient as a single reference. The Romoland, California Quad Map shows no physical features that are likely to environmentally impact the subject property. The subject property is identified as a rural residential developed, rectangular property. No mines, aboveground storage tanks, or wetlands were depicted in the immediate area of the subject property; however, there is an intermittent wash to the west and to the east. The elevation of the subject property is approximately 1431 feet above mean sea level with a gentle topographic gradient to the southeast (USGS Romoland 7.5' Quadrangle). A copy of the map can be found in the Appendix D.

D. PHYSICAL AND GENERAL HYDROGEOLOGIC CHARACTERISTICS

The subject property's physical setting was researched employing a United States Geological Survey (USGS) 7.5 Minute Topographic Quadrangle (Quad) Map relevant to the subject property. The USGS 7.5 Minute Quad Map has an approximate scale of 1 inch to 24,000 feet, and shows physical features such as wetlands, roadways, mines, and buildings. The USGS 7.5 Minute Quad Map was used as the Standard Physical Setting Source, and is sufficient as a single reference.

The Romoland, California Quad Map shows no physical features that are likely to environmentally impact the subject property. The subject property is identified as a rural undeveloped, rectangular property. No mines, aboveground storage tanks, or wetlands were depicted in the immediate area of the subject property. The elevation of the subject property is approximately 1431 feet above mean sea level with a gentle topographic gradient to the northeast (USGS Romoland 7.5' Quadrangle).

D. GENERAL HYDROGEOLOGIC CHARACTERISTICS

The subject property is within the San Jacinto Groundwater Basin, underlying the San Jacinto Watershed. The San Jacinto Groundwater Basin underlies several valleys in the southwestern portion of Riverside County. The basin is bounded on the southeast by the Vandeventer Flat Groundwater Basin and otherwise bounded by impermeable rocks of the San Jacinto Mountains. The valley is drained by the South Fork of the San Jacinto River and receives an average annual precipitation ranging from about 14 to 28 inches. (California Department of Water Resources (DWR). 1975. *California's Ground Water*. Bulletin 118.). Groundwater in the basin is found in Quaternary age younger and older alluvium that consists of clay, silt, sand, and gravel. Alluvial deposits may reach as about 100 feet in thickness, but are more commonly less than about 45 feet thick. Groundwater is also produced from residuum and from fractured crystalline rocks below the basin. (California Department of Water Resources (DWR). 1975. *California's Ground Water*. Bulletin 118.). Recharge of this basin is likely from percolation of precipitation and runoff, and subsurface flow from San Jacinto Mountains and Lake Perris. Site-specific groundwater information for the subject property was unavailable. Please see the EDR Summary Radius Map Report for Hydrologic and Geologic information, Appendix D.

SECTION IV.
HISTORICAL REVIEW

The site historical review is used to develop an understanding of the previous uses of the subject property and surrounding area in an effort to identify the likelihood of past uses, or activities having environmentally impacted, the subject property. The historical review consisted of a search of various public and private Standard Historical Sources, as detailed in the sections below.

As defined by ASTM E1527-2013, a Standard Historical Source is considered complete if the information contained within the source identifies all uses of the subject property from the time the property was first used for residential, agricultural, commercial, industrial or governmental purposes. Ideally, the information should be available in either five-year intervals or site milestone events (i.e., initial construction activities, demolition activities, etc.). However, available public and private historical sources do not always fulfill this goal, in which case, the closest approximation is made based upon the sources readily available at the time of historical review.

Historical Review Summary: From the historical information review discussed below, E-S concludes that the manufactured home was built around 2006 on the subject property and the surrounding parcels have never been developed and primarily used for agriculture up until the late 1980s. No dry cleaners, gasoline stations, major landfills, military bases, or heavy industrial businesses were identified on the subject property. Currently the site has the manufactured home and the other parcels are tilled and undeveloped.

A. AERIAL PHOTOGRAPH REVIEW

Aerial photographs were reviewed by E-S to evaluate past land-use patterns of the subject property and vicinity. The photos were supplied by EDR and are from the following years 1938, 1949, 1953, 1961, 1967, 1978, 1985, 1989, 1997, 2002, 2006, 2010 and 2014. Copies of representative aerial photographs can be found in Appendix C. This review revealed the following:

1938 to Present

The subject property is in a rural area, and the parcel with the home was developed sometime in the mid 2000's. No surrounding structures are present until the 1960's. The surrounding area usage consists of rural agricultural land and single family residential development. The subject property is undeveloped and appears to have had agricultural usage from 1938 to the early 80's. The surrounding area has continued to grow with residential and commercial properties and the typical infrastructure improvement of roads and utilities.

B. BUILDING PERMIT REVIEW

In an effort to evaluate the development history of the subject property, E-S reviewed the Riverside County, Department of Planning website (http://www3.tlma.co.riverside.ca.us/). Review of this information indicated the Assessor's Parcel Numbers for the subject property is 331-110-027, 331-110-35, 331-110-041, 331-140-010 and 331-140-025. The recorded lot size for all of the above is approximately 76.38 acres. The legal description is not available, Thomas Bros. page 838, grid C2 and D2, Township and Range is T5S R3W SE15. No other information significant to this report was obtained from the Assessor's data. The data can also be found in the Appendix E.

C. SANBORN FIRE INSURANCE MAP REVIEW

E-S requested Sanborn Fire Insurance Maps for the subject property; however, no maps were available for the subject property.

D. CITY STREET DIRECTORY REVIEW

E-S did not request a "City Street Directory" for the area of the subject property due to the rural environment.

E. HISTORICAL TOPOGRAPHIC MAP REVIEW

Historical topographic maps were reviewed on line by E-S. No significant additional information was revealed after review. A map can be found Appendix B.

F. INTERVIEWS

As specified in ASTM E1527-2013, interviews will be conducted with parties including present land owners and occupants, past land owners and occupants, and adjoining property owners, as appropriate and as available. E-S did not interview a Key Site Manager, however Mr. Alejandro Soberanes (occupant) and Mrs. Carissa Hainsworth (owner/developer) was able to help answer questions and fill out the questionnaire. No significant additional information was revealed after the interview. During the site visit, the E-S Assessor was not accompanied by the Key Site Manager due to the rural vacant state of the properties.

G. RECORDED LAND TITLE RECORDS

As specified in ASTM E1527-2013 *recorded land title records* means records of historical fee ownership, which may include leases, land contracts and AULs on or of the *property* recorded in the place where land title records are, by law or custom, recorded for the local jurisdiction in which the *property* is located (often such records are kept by a municipal or county recorder or clerk). Such records may be obtained from title companies or directly from the local government agency. Information about the title to the *property* that is recorded in a U.S. district court or any place other than where land title records are, by law or custom, recorded for the local jurisdiction in which the *property* is located, are not considered part of *recorded land title records*, because often this source will provide only names of previous *owners*, lessees, easement holders, etc., and little or no information about uses or occupancies of the *property*, but when employed in combination with another source *recorded land title records* may provide helpful information about uses of the *property*. This source cannot be the sole historical source consulted. If this source is consulted, at least one additional standard historical source must also be consulted. E-S's performed a search of the Riverside County Assessor's office, the assessor's report and parcel map can be found in Appendix E.

A title report was not provided; however a search was conducted on-line at the Riverside County Land information site (http://www3.tlma.co.riverside.ca.us/pa/rclis/index.html). Such a report typically does not list all documents related to the subject property, simply those that the title insurer wants to exclude from coverage and/or that are of potential interest to the transaction. Title reports may also be one method to evaluate the environmental liens search required by the ASTM E1527-2013 standard, which is required to be performed by the report User. A liens/use limitations search by the User is required by the ASTM/AAI standard 180 days or less prior to acquisition of a property.

H. DATA GAPS

As specified in ASTM E1527-2013, data gaps are defined as "a lack or inability to obtain information required by the standards and practices listed in the regulation despite good faith efforts by the Environmental Professional or prospective landowner to gather such information". Data failure occurs when historical research does not identify standard historical sources that are "reasonably ascertainable" and "likely to provide useful information to identify prior uses of the property". Per ASTM E1527-13, the assessment must document data failure and give reasons why historical sources were not available or excluded (if applicable). Based on E-S's research, no significant data gaps were identified for the subject site.

SECTION V.
AGENCY RECORDS REVIEW

In an effort to evaluate whether the subject property and/or nearby sites have reported USTs, hazardous waste generation, or hazardous material releases, regulatory information from the federal, state, and local agencies listed below were reviewed. The database report was compiled by a third-party database provider and is reportedly the most recent database information available from each agency. A copy of the database report is included in the appendix. According to the database provider, their search of the various databases conforms to ASTM E1527-2013 Standards. However, the accuracy of the information provided by the agencies is not without error or omission, and the information listed is limited to that which was reported to or gathered by that agency. A limited discussion of the number of sites identified, and of their potential impact to the subject property, follows this page. In addition, E-S may request state and/or local regulatory agency information for the subject property, targeting those agencies most likely to provide information useful for this Assessment. The primary databases reviewed and their general search range criteria are below:

Federal Database	**Search Range**
USEPA NPL/Superfund databases:	Target Property to 1.0 mile
USEPA CERCLIS databases:	Target Property to 0.5 mile
USEPA RCRIS facilities databases	
Corrective Action Sites:	1.0 mile
TSD Facilities:	0.5 mile
Generators:	0.25 mile
USEPA ERNS database:	Target Property
US Engineering Controls:	0.5 mile
US Institutional Controls:	0.5 mile
US DOD/FUDS databases:	1.0 mile
US Brownfields:	0.5 mile
State/Local Database	**Search Range**
State Superfund databases:	
Hist Cal-Sites:	1.0 mile
CA Bond Exp. Plan	1.0 mile
State Landfills database:	0.5 mile
State Cortese	0.5 mile
State/Local LUST databases:	0.5 mile
State Spills databases:	
SLIC:	0.5 mile
CHMIRS:	Target Property
State/Local UST/AST databases:	0.25 mile
State Liens database:	Target Property
State Deed database:	0.5 mile
State VCP database:	0.5 mile
State EnviroStor/Response databases:	1.0 mile
State HAZNET database:	Target Property
Local Haz-Mat/Cleanup databases:	Target Property

A. REVIEW OF FEDERALLY REPORTED ENVIRONMENTAL DATA

The review of the federal environmental databases listed below attempts to identify environmental problem sites, activities, and occurrences from the records of the U.S. Environmental Protection Agency (USEPA). The detailed listing, and a map showing the location of the sites relative to the subject property, is included in the appendix.

National Priorities List (NPL) of Superfund Sites:
The NPL is the USEPA's database of hazardous waste sites currently identified and targeted for priority cleanup action under the Superfund program. This search includes Proposed NPL sites, Delisted NPL sites, and NPL Recovery sites. NPL sites may encompass relatively large areas. As such, polygon coverage for the site boundaries (for a majority of the NPL sites), as produced by the EPA may be provided. A search of the NPL database identified the following number of Superfund sites within the specified database search range:

Number of Sites	Number Listed at Subject Property
None	None

National Priorities List Liens (NPL Liens):

The NPL Liens database contains a list of filed notices of Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. A search of the NPL Liens database identified the following number of sites within the specified database search range:

Number of Sites	Number Listed at Subject Property
None	None

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980:
Mandated as part of the 1980 Superfund Act, the CERCLIS (Comprehensive Environmental Response, Compensation and Liability Information System) list is an EPA compilation of the sites investigated, or currently being investigated, for a release or potential release of a regulated hazardous substance under the CERCLA regulations. A search of the CERCLIS and CERCLIS-NFRAP (no further remedial action planned) databases identified the following number of sites within the specified database search range:

Number of Sites	Number Listed at Subject Property
None	None

RCRIS Corrective Action (RCRIS-CA) Sites:

The RCRIS-CA report contains information pertaining to hazardous waste handling facilities which have conducted, or are currently conducting corrective actions, as regulated by the Resource Conservation and Recovery Act. A search of the RCRIS-CA list identified the following number of sites within the specified database search range:

Number of Sites	Number Listed at Subject Property
None	None

Resource Conservation and Recovery Act Information System (RCRIS) Treatment, Storage, and Disposal (TSD) Facilities:

The RCRA program identifies and tracks hazardous waste from generation source to the point of ultimate disposal. The RCRIS-TSD facilities database is the composite of reporting facilities that transport, store, or dispose of controlled or hazardous waste. Identification on this list does not indicate that a site has impacted the environment. A search of the RCRIS-TSD database identified the following number of facilities within the specified database search range:

Number of Sites	Number Listed at Subject Property
None	None

RCRIS Generator Facilities:

The RCRIS program identifies and tracks hazardous waste from generation source to the point of ultimate disposal. The RCRIS generator facilities database (large and small quantity generators and various derivations) is the composite of reporting facilities that generate hazardous waste. Identification on these lists does not indicate that a site has impacted the environment. A search of the RCRIS facilities databases identified the following number of sites within the specified database search range:

Number of Sites	Number Listed at Subject Property
None	None

Emergency Response Notification System (ERNS):

The ERNS database is the historical record of releases of hazardous substances reported to the USEPA. A search of the ERNS database identified the following number of releases within the specified database search range:

Number of Sites	Number Listed at Subject Property
None	None

EPA Engineering and Institutional Controls (US ENG/INST CONTROL) Sites:

These databases include listings of sites with engineering or institutional controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are required as part of the institutional controls. A search of the US ENG/INST CONTROL database(s) identified the following number of sites within the specified database search range:

Number of Sites	Number Listed at Subject Property
None	None

Department of Defense (DOD) Sites:

The Unites States Geological Survey (USGS) maintains the DOD database, which consists of federally owned or administered lands, administered by the DOD, that have an area equal to or greater than 640 acres of the United States, Puerto Rico, and the US Virgin Islands. A search of the DOD database identified the following number of sites within the specified database search range:

Number of Sites	Number Listed at Subject Property
None	None

Formerly Used Defense Sites (FUDS):

The U.S. Army Corps of Engineers database contains a listing of locations of Formerly Used Defense Sites (FUDS) where the U.S. Army Corps of Engineers is actively working or will take necessary cleanup actions. A search of the FUDS database identified the following number of sites within the specified database search range:

Number of Sites	Number Listed at Subject Property
None	None

US Brownfields Sites (Brownfields):

The US Brownfields site includes brownfields properties addressed by Cooperative Agreement Recipients (CAR) and brownfields properties addressed by Targeted Brownfields Assessments (TBA). EPA's TBA program is designed to help states, tribes, and municipalities minimize the uncertainties of contamination often associated with brownfields. Cooperative Agreement Recipients (states, political subdivisions, territories, and Indian tribes) become Brownfields Cleanup Revolving Loan Fund (BCRLF) cooperative agreement recipients when they enter into BCRLF cooperative agreements with the USEPA. EPA selects BCRLF cooperative agreement recipients based on a proposal and application process. BCRLF cooperative agreement recipients must use EPA funds provided through BCRLF cooperative agreement for specified brownfields-related cleanup activities. A search of the Brownfields database identified the following number of sites within the specified database search range:

Number of Sites	Number Listed at Subject Property
None	None

CERCLA Lien Information (LIENS 2):

A Federal Superfund Lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties. A search of the LEINS 2 database identified the following number of sites within the specified database search range:

Number of Sites	Number Listed at Subject Property
None	None

Facility Index System (FINDS) sites:

The FINDS Report is a computerized inventory of all facilities that are regulated or tracked by the U.S. Environmental Protection Agency. These facilities are assigned a unique identification number that serves as a cross-reference for databases in the EPA's program system. Identification on this database does not indicate that a site has impacted the environment. A search of the FINDS database identified the following number of sites within the specified database search range:

Number of Sites	Number Listed at Subject Property
None	None

B. REVIEW OF STATE-REPORTED ENVIRONMENTAL DATA

Results of the state regulatory records search follow. Each section begins with a general description of the databases searched and the corresponding responsible state or local agency. The detailed listing, and a map showing the location of the sites relative to the subject property, is included in the appendix.

State Hazardous Waste Site (SHWS) Databases:

State Hazardous Waste Site records are the states' equivalent to CERCLIS. The Department of Toxic Substances Control (DTSC) Hist Cal-Sites database contains potential or confirmed hazardous substance release properties. The Calsites database was created by the Department of Toxic Substances and Control (DTSC), but DTSC no longer up-dates the Calsites database. The Calsites database was replaced by the EnviroStor database (see EnviroStor section below). The CA Bond Expenditure Plan database contains the Department of Health Services site-specific expenditure plan, which is the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. A search of the State Hazardous Waste Site database(s) identified the following number of sites within the specified database search range:

Number of Sites	Number Listed at Subject Property
None	None

Solid Waste Facilities, Landfills and Recycling Facilities:

The State Solid Waste Facilities and Landfills and Recycling databases include an inventory of active, closed, and inactive solid waste disposal facilities, landfills, refuse transfer stations, and recycling facilities (non-landfill sites). A search of these databases identified the following number of sites within the specified database search range:

Number of Sites	Number Listed at Subject Property
One	None

Historical Cortese Database:

The Historical Cortese list contains hazardous waste and substance sites compiled pursuant to Assembly Bill 3750 (Cortese, Chapter 1048, Statutes of 1986). The information included in this list was compiled with information from the California DTSC, the State Water Resources Control Board, and the California Waste Management Board. This database contains primarily LUST sites, although other types of sites may be included. A search of the Cortese database identified the following number of sites within the specified search range:

Number of Sites	Number Listed at Subject Property
One	None

Leaking Underground Storage Tanks (LUSTs):

State and/or local agencies maintain inventories of LUSTs (also known as LTANKS) in a statewide database. A search of the LUST database identified the following number of reported LUST sites within the specified search range:

Number of Sites	Number Listed at Subject Property
One	None

State/Local Spills Databases:

The Spills, Leaks, Investigations, and Cleanup (SLIC) Cost Recovery Listing program is designed to protect and restore water quality from spills, leaks, and similar discharges. The database(s) included in this section are the states' equivalent to the ERNS report and generally contain information for reported hazardous material/waste surface or groundwater contamination release investigations reported in that state or locality. The California Hazardous

Material Incident Report System (CHMIRS) database contains information on reported hazardous waste material incidents (accidental releases or spills). A search of these databases identified the following number of sites within the specified database search range:

Number of Sites	Number Listed at Subject Property
None	None

Underground Storage Tanks (USTs)/Aboveground Storage Tanks (ASTs):

USTs are regulated under Subtitle I of the RCRA (as well as various state regulations), and must be registered with the State Underground Storage Tank Program. These are registered USTs only, and identification on this list(s) does not necessarily indicate that the site has impacted the environment. This search includes review of the Active UST Facilities (UST) database, Facility Inventory Database (CA FID UST), Hazardous Substance Storage Container Database (HIST UST), and SWEEPS UST Listing database (SWEEPS UST). Also potentially included in this section are sites identified on historic UST databases that are no longer maintained. The AST database is the State Water Resources Control Board's Hazardous Substance Storage Container Database for registered ASTs. A search of these UST and AST databases identified the following number of sites within the specified search range:

Number of Sites	Number Listed at Subject Property
One	None

Environmental Liens Listing (LIENS):

The Department of Toxic Substances Control's (DTSC) LIENS database includes a listing of property locations with environmental liens for California where DTSC is a lien holder. A search of the LIENS database identified the following number of sites within the specified database search range:

Number of Sites	Number Listed at Subject Property
None	None

Deed Restriction Listing (DEED):

The Department of Toxic Substances Control's (DTSC) DEED database includes a listing of Site Mitigation and Brownfields Reuse Program (SMBRP) Facility Sites with Deed Restrictions and Hazardous Waste Management Program Facility Sites with Deed/Land Use Restrictions. The SMBRP list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active, and some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners. A search of the DEED database identified the following number of sites within the specified database search range:

Number of Sites	Number Listed at Subject Property
None	None

Voluntary Cleanup Program (VCP):

The Department of Toxic Substances Control's (DTSC) VCP database contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have requested that DTSC oversee the investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs. A search of the VCP database identified the following number of sites within the specified database search range:

Number of Sites	Number Listed at Subject Property
None	None

State Response/EnviroStor Databases:

The Department of Toxic Substances Control's (DTSC) RESPONSE database identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk. The DTSC's Site Mitigation and Brownfields Reuse Program's (SMBRPs) EnviroStor database identifies sites that have reported contamination or sites for which there may be reason to investigate

further. The database includes the following site types: Federal Superfund Sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in Cal-Sites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites. A search of the Response and EnviroStor databases identified the following number of sites within the specified database search range:

Number of Sites	Number Listed at Subject Property
One	None

State and/or Local Agency Generators (HAZNET):

The HAZNET data is extracted from copies of hazardous waste manifests kept by the Cal-EPA, DTSC. These manifests track hazardous wastes from generation source to the point of ultimate disposal. Permit data is generally culled from local agency database(s) for hazardous material handlers and generators. Identification on these lists does not indicate that a site has impacted the environment and the data has not always been verified for accuracy by the DTSC or local agencies. A search of the HAZNET and Permit data identified the following number of reported sites within the specified database search range:

Number of Sites	Number Listed at Subject Property
None	None

National Pollutant Discharge Elimination System (NPDES) Database:

The National Pollutant Discharge Elimination System (NPDES) includes sites that have had or have a permit for the discharge of wastewater or stormwater issued by the Regional Water Quality Control Board or a local agency (e.g., Public Works Department). The NPDES data identified the following number of reported sites within the specified database search range:

Number of Sites	Number Listed at Subject Property
None	None

State and/or Local Agency Air Emissions Database (EMI):

The EMI data is extracted from permits for air emissions kept by the state or local air resources agency. Identification on these lists does not indicate that a site has impacted the environment. A search of the EMI database identified the following number of reported sites within the specified database search range:

Number of Sites	Number Listed at Subject Property
None	None

Notify 65 Database:

Notify 65 listings generally indicate that some type of release and/or groundwater impact have occurred which was required to be reported under Proposition 65 rules. A search of the Notify 65 data identified the following number of reported sites within the specified database search range:

Number of Sites	Number Listed at Subject Property
None	None

EDR Historical Auto Stations, Historical Cleaners, & Manufactured Gas Plants Databases:

These databases include former gas stations, auto repair shops, dry cleaners, Laundromats, and manufactured gas plants that are typically no longer active. Identification on these databases does not necessarily indicate that such activities actually occurred at that site or that a site has impacted the environment. A search of these databases identified the following number of sites within the specified database search range:

Type of Site	Number of Sites	Number Listed at Subject Property
Historical Auto Stations	None	None
Historical Cleaners	None	None
Historical Manufactured Gas	None	None

Orphan Unplottable Sites:
"Orphan" sites are those which could not be plotted by the database provider using conventional geo-coding methods, typically because the information provided in the original government database was unclear, incorrect or missing. A listing of orphan sites (if any) appears at the end of the database, immediately after the last plottable site description.

E-S reviewed the orphan list for sites with the same name as the subject property (if applicable) and/or the same or similar property address. This review is inherently limited by the incomplete and/or possibly incorrect data reported in the orphan listings. For orphans apparently not related to the subject property, only those obviously located adjoining or within a short distance that may affect the property are discussed. Orphan sites which are also listed in the plotted section are not re-discussed. E-S's review of the orphan list revealed no obvious sites of concern listed at or adjoining the subject property.

C. LOCAL AGENCY RECORDS SEARCH

The following is a discussion of the results of E-S's written records requests, online regulatory database review, and/or personal/telephone contacts (as applicable) made to state and/or local government agencies in an effort to obtain potential information relevant to the subject property:

County of Riverside Environmental Department:

E-S contacted the County of Riverside Environmental Health in an effort to evaluate whether hazardous material incidents, USTs, and/or LUSTs have been reported at the subject property address (2630 Trumble Road). The County of Riverside Environmental Department, had no incidents that were known to them.

California EPA - Department of Toxic Substances Control (DTSC):

E-S also reviewed CalEPA-DTSC's Hazardous Waste Tracking System (HWTS) online database (http://hwts.dtsc.ca.gov) in an effort to identify potential hazardous waste generation/disposal activities associated with the subject property address. A search was not performed, because the property does not have a physical address, there is no way to track hazardous waste generators through Department of Toxic Waste.

California Department of Water Resources:

E-S contacted the California Department of Water Resources in an effort to evaluate whether any state listed water wells or water resources are located on the subject property address. No water wells are located on the property.

D. TRIBAL RECORDS SEARCH

According ASTM E1527-2013, records for local and tribal records shall be checked to satisfy all appropriate inquiry for this assessment. The following is a discussion of the results of E-S's written records requests, online regulatory database review, and/or personal/telephone contacts (as applicable) made to tribal governmental agencies in an effort to obtain potential information relevant to the subject property:

The subject property is not located on tribal property and therefore no inquiry was necessary.

SECTION VI.
SITE VISIT OBSERVATIONS

A. SITE STRUCTURE CHARACTERISTICS

At the time of the site visit, the subject property consisted of five agriculturally developed parcels of land, totaling approximately 76.38 Acres. The property consists of one small residential parcel and four tilled undeveloped parcels of land. No pesticides, sumps, clarifiers, swales, or surface impoundments potentially containing hazardous materials were observed on the subject property. Weather conditions at the time of the site visit consisted of clear skies, with temperatures in the 60s.

B. WASTEWATER AND STORMWATER MANAGEMENT

No wastewater was observed at the subject site.

Storm water and surface run-off from the subject property and adjacent properties inter the natural storm water and flood control conveyance systems.

C. POTABLE WATER SUPPLY

The subject property currently utilizes water from Eastern Municipal Water District.

E. BUSINESS OPERATIONS DESCRIPTION

According to the Riverside County Department of Planning, the subject property zone is “RR and AG”, agricultural. E-S’s research indicates no dry cleaners, gasoline stations, military bases, or major manufacturing operations have occupied the subject property.

SECTION VII.
HAZARDOUS MATERIAL/WASTE OBSERVATIONS

A. HAZARDOUS MATERIALS HANDLING AND STORAGE

No hazardous materials were observed at the subject property. No significant staining or spillage was observed in any of the areas inspected. No other significant hazardous materials handling or storage were observed on the subject property during the site visit.

B. WASTESTREAM GENERATION, STORAGE AND DISPOSAL

During the inspection, no hazardous waste generation, storage, or improper hazardous waste disposal was observed on the subject property. Stained or discolored sinks, drains, catch basins, drip pads, or sumps were not observed. Additionally, significant spills or staining were not observed at the subject property.

C. SOLID WASTE DISPOSAL

During the inspection, no solid waste generation, storage, or improper solid waste disposal was observed on the subject property.

D. ABOVEGROUND STORAGE TANKS (ASTs)

Visual or physical indicators of current or former ASTs were not observed at the subject property during the site visit.

E. UNDERGROUND STORAGE TANKS (USTs)

As discussed in the Section V (Agency Records Review) of this report, no USTs were reported at the subject property. In addition, no visual or physical evidence of current or past USTs were discovered during the site visit in the readily visible areas of the property. In particular, E-S searched for: fill pipes, vent pipes, man-ways, manholes, access covers, and or concrete pads not homogeneous with surrounding surfaces, concrete built-up areas potentially indicating pump islands, abandoned pumping equipment, or fuel pumps.

SECTION VIII.
OTHER POTENTIAL ISSUES OF CONCERN

A. PCB-CONTAINING EXTERIOR ELECTRICAL TRANSFORMERS

One pole mounted transformer was observed on the subject property and appeared in good condition.

B. OTHER PCB-CONTAINING INTERIOR OR EXTERIOR EQUIPMENT

During the on-site inspection, no evidence was observed of any equipment likely containing PCB-contaminated fluid (e.g., interior electric transformers, hydraulic elevators, hydraulic hoists/lifts, hydraulic loading dock ramps, other fluid containing equipment, etc.).

C. SUSPECT ASBESTOS-CONTAINING MATERIALS (ACMs)

One residential house is present on the property, and asbestos-containing materials (ACMs) identification are beyond the scope of this assessment.

D. LEAD-BASED PAINT (LBP)

One residential house is present on the property, and lead-based paint (LBP) identification are beyond the scope of this assessment.

E. LEAD IN DRINKING WATER

Federal regulations limit lead in publicly supplied water to no more than 15 parts per billion (ppb), however, the most common source of lead in tap water is from interior plumbing systems (piping, connections, faucets, etc.). Children are the most susceptible to possible health effects from consuming lead-tainted drinking water. Due to the nature of the property being undeveloped, no observations of these sources were observed. The presence or absence of elevated lead concentrations in the water can only be confirmed through laboratory testing, and such analysis is beyond the scope of this assessment.

F. AIR QUALITY

Unusual smells, noxious odors, or visual emissions were not observed during the inspection of the subject property. However, these observations are general in nature and should not be construed as an air quality assessment.

G. RADON

According to the USEPA, the general area of the site has a predicted average indoor screening level of less than the EPA guideline action level of 4.0 picoCuries per liter of air (EPA Radon Zone Level of 1). Therefore, based upon the reported subsurface characteristics of the area, the subject property exhibits no potential for high-level radon exposure.

H. RAILROAD RIGHTS-OF-WAY

There are several potential environmental risks associated with railroad rights-of-way, including the usage of herbicides, pesticides, petroleum materials and related heavy metals (e.g. arsenic) to maintain the tracks, as well as the potential spillage of hazardous materials from railcars. During the site visit, no railroad rights-of-way, spurs, or related features were observed immediately adjoining the subject property.

SECTION IX.
ADJOINING PROPERTY OBSERVATIONS

As discussed below, based upon limited observations of the adjoining properties from publicly accessible locations, as well as a review of federal, state, and local environmental databases, none of the adjoining properties appeared to have significantly environmentally impacted the subject property at this time.

A. ADJOINING PROPERTIES MATERIALS STORAGE

Visual observations of the portions of the adjoining properties visible from the subject property or public roadways did not indicate the exterior storage of hazardous materials or wastes. No indications of spillage or staining were observed in the observable exterior areas of these sites. Additionally, no obvious indications of improper hazardous material storage or unusual or suspicious materials handling or storage practices were observed.

B. ADJOINING PROPERTIES WASTESTREAM DISPOSAL

No unusual or suspicious waste stream disposal activities were observed on the portions of the adjoining properties visible from the subject property or public roadways.

C. RECOMMENDATIONS

Based on the results of this Phase I, no further investigation is recommended for this Site.

SECTION X.
STATEMENT OF THE ENVIRONMENTAL PROFESSIONALS

This Assessment has been performed for the exclusive use and benefit of the addressee(s) identified on the cover of this report, or agents directly specified by it (them), for the transaction at issue concerning the subject property described in this report. This Assessment shall not be used or relied upon by others without the prior written consent of Earth-Strata, Inc. and of the addressee(s) named on the cover of this report.

STATEMENT OF QUALITY ASSURANCE

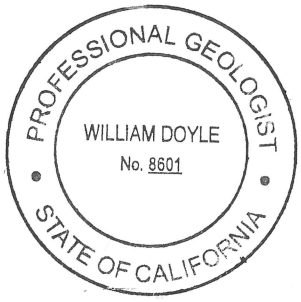
I declare that, to the best of my professional knowledge and belief, I meet the definition of an Environmental Professional as defined in § 312.10 of 40 CFR 312 and 12.13.2. I have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. I have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312. The conclusions contained within this Assessment are based upon site conditions I readily observed and were reasonably ascertainable and present at the time of the site visit. The findings and conclusions represent my best professional opinion and judgment. In addition, the conclusions and recommendations stated in this report are based upon personal observations made by E-S and upon information provided by others. I have no reason to suspect or believe that the information provided is inaccurate.

STATEMENT OF QUALITY CONTROL

The objective of this Phase I ESA was to ascertain the potential presence or absence of RECs that could impact the subject property, as delineated in the scope of services and limitations identified in this report and in the service agreement. The procedure was to perform reasonable steps in accordance with the existing regulations, currently available technology, and generally accepted environmental consulting practices, in order to accomplish the stated objective.

Signature of Professional Geologist – *William T. Doyle, #8601*

Signature/Environmental Assessor



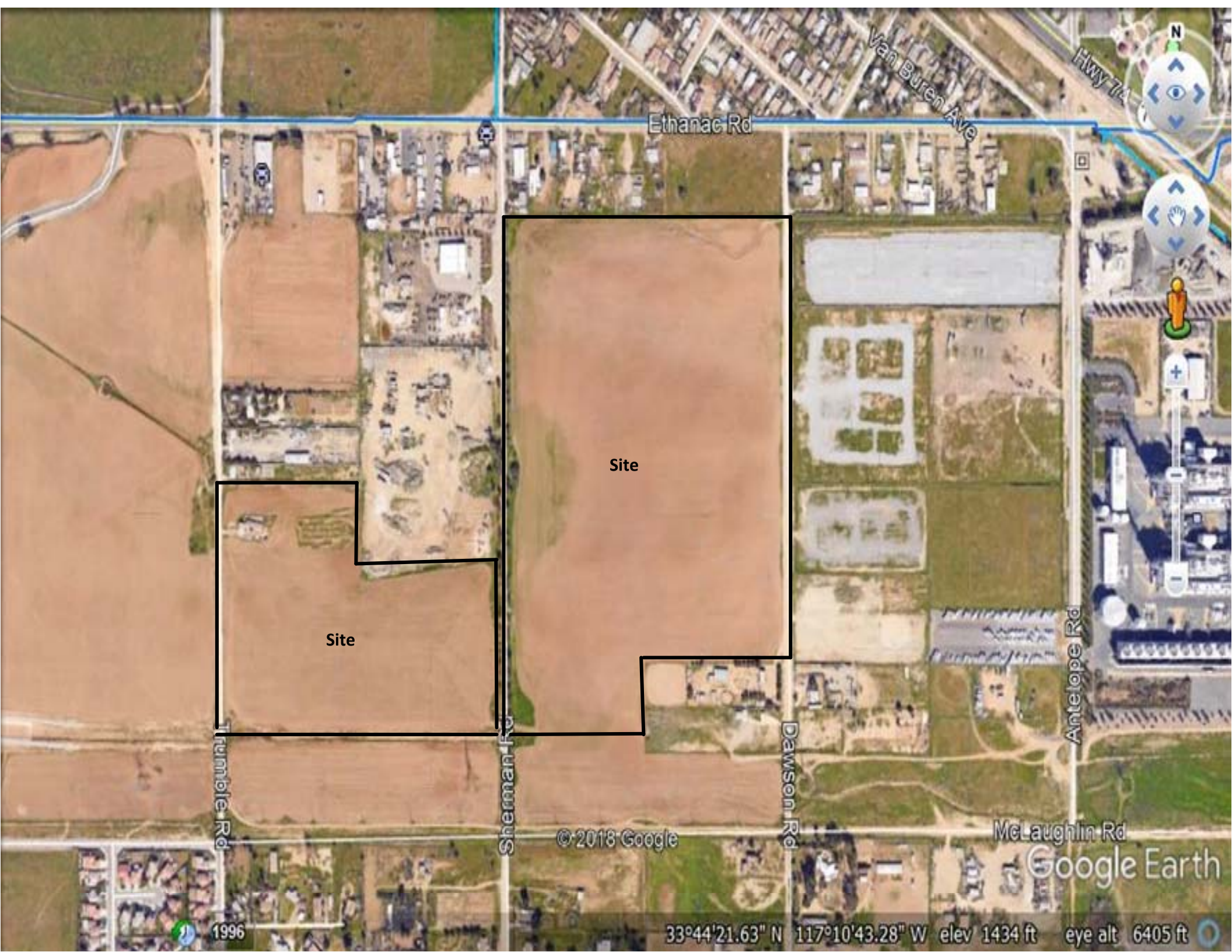
Acronyms and Abbreviations

Below are several abbreviations that E-S uses to describe various projects.

ACM	Asbestos-containing material
AQMD	Air Quality Management District
AST	aboveground storage tank
ASTM	American Society for Testing and Materials
bgs	Below Ground Surface
BTEX	Benzene-toluene-ethylbenzene-xylene
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CERCLIS	Comprehensive Environmental Response, Compensation and Liability Information System
CFR	Code of Federal Regulations
CHMIRS	California Hazardous Material Incident Report System
COC's	Chemicals of Concern
CDL	Clandestine Drug Labs
DEP	Department of Environmental Protection
DOD	Department of Defense
DOE	Department of Energy
DTSC	Department of Toxic Substance Control
EDR	Environmental Data Resources, Inc.
ERNS	Emergency Response Notification System
ESA	Environmental Site Assessment
FINDS	Facility Index System
FUDS	Formerly Used Defense Sites
HMIRS	Hazardous Materials Information Reporting System
ICIS	Integrated Compliance Information System
LBP	Lead Based Paint
LDL	Laboratory Detection Limit
LEL	Lower Explosion Limit
LUCIS	Land Use Control Information System
LUST	leaking underground storage tank
MCL	Maximum Contaminant Level
MLTS	Material License Tracking System
mg/L	Milligrams per liter
MSDS	Material Safety Data Sheet
MTBE	Methyl Tertiary Butyl Ether
NFA	No Further Action
NPL	National Priority List
ODI	Open Dump Inventory
PADS	PCB Activity Database System
PCB	Poly Chlorinated Biphenyl
PEL	Permissible Exposure Limit
Ppb	Parts per billion
RAP	Remedial Action Plan
RCRA	Resource Conservation and Recovery Act
REC	Recognized environmental condition
RWQCB	Regional Water Quality Control Board
SVE	Soil Vapor Extraction
Ug/L	Micrograms per Liter
UST	Underground storage tank
VOC	Volatile Organic Compound

APPENDIX

A


Ethanac Rd
Van Buren Ave
Hwy 74
Site
Site
Trumble Rd
Sherman Rd
Dawson Rd
Antelope Rd
McLaughlin Rd
© 2018 Google
Google Earth
1996
33°44'21.63" N 117°10'43.28" W elev 1434 ft eye alt 6405 ft

Site Photograph's

View of 26340 Trumble Road small manufactured home and garage.

Another view of 26340 Trumble Road small manufactured home and garage.

View of RVC flood Control channel.

View of tilled field adjacent to residential property and gravel sand mine looking northeast.

View of tilled field between Sherman and Dawson Road looking northeast.

View of adjacent property sand and gravel mine on Sherman Road

View of between Sherman and Dawson Road looking north.

View of property east of Sherman road adjacent to horse corral.

View of horse property adjacent to Sherman Road and flood control channel looking east.

View of property adjacent to Sherman road looking southeast

APPENDIX

B

Motte Rancon Distribution Center

26340 Trumble Road

ROMOLAND, CA 92585

Inquiry Number: 5269785.5

April 24, 2018

The EDR Aerial Photo Decade Package

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

04/24/18

Site Name:

Motte Rancon Distribution Cen
26340 Trumble Road
ROMOLAND, CA 92585
EDR Inquiry # 5269785.5

Client Name:

Rainwater Consulting
24051 Golden Pheasant Lane
Murrieta, CA 92562
Contact: Tim Doyle

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

Search Results:

Year	Scale	Details	Source
2014	1"=500'	Flight Year: 2014	USDA/NAIP
2010	1"=500'	Flight Year: 2010	USDA/NAIP
2006	1"=500'	Flight Year: 2006	USDA/NAIP
2002	1"=500'	Acquisition Date: June 06, 2002	USGS/DOQQ
1997	1"=500'	Flight Date: October 16, 1997	USGS
1989	1"=500'	Flight Date: August 15, 1989	USDA
1985	1"=500'	Flight Date: July 28, 1985	USDA
1978	1"=500'	Flight Date: September 20, 1978	USDA
1967	1"=500'	Flight Date: May 15, 1967	USDA
1961	1"=500'	Flight Date: August 18, 1961	USDA
1953	1"=500'	Flight Date: August 28, 1953	USDA
1949	1"=500'	Flight Date: May 23, 1949	USDA
1938	1"=500'	Flight Date: June 14, 1938	USDA

When delivered electronically by EDR, the aerial photo images included with this report are for ONE TIME USE ONLY. Further reproduction of these aerial photo images is prohibited without permission from EDR. For more information contact your EDR Account Executive.


INQUIRY #: 5269785.5
YEAR: 2014
= 500'
N
EDR

INQUIRY #: 5269785.5

YEAR: 2010

= 500'

N

EDR


INQUIRY #: 5269785.5
YEAR: 2006
= 500'
N
EDR

INQUIRY #: 5269785.5

YEAR: 2002

= 500'

N

EDR

INQUIRY #: 5269785.5

YEAR: 1997

= 500'

N

EDR

INQUIRY #: 5269785.5

YEAR: 1989

= 500'

N

EDR

INQUIRY #: 5269785.5

YEAR: 1985

= 500'

N

EDR

INQUIRY #: 5269785.5

YEAR: 1978

= 500'

N

EDR

INQUIRY #: 5269785.5

YEAR: 1967

= 500'

N

EDR

INQUIRY #: 5269785.5

YEAR: 1961

= 500'

N

EDR

INQUIRY #: 5269785.5

YEAR: 1953

= 500'

N

EDR

INQUIRY #: 5269785.5

YEAR: 1949

= 500'

N

EDR

INQUIRY #: 5269785.5

YEAR: 1938

= 500'

N

EDR

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

ROMOLAND QUADRANGLE
CALIFORNIA-RIVERSIDE CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)

2551 IV SE (STEELE PEAK)
2551 I SE (LAKEVIEW)
2551 III NE (LAKE ELSINORE)
2551 II NE (WINCHESTER)
(WILDOMAR) 2551 III SE
(BACHELOR MTN.) 2551 II SE

117°15′ 477000m E. R. 4 W. R. 3 W. 479 PERRIS 2.5 MI. 480 12′30″ 481 RIVERSIDE 21 MI. PERRIS 3.8 MI. 2551 I SW (PERRIS) SAN BERNARDINO 32 MI. 484 10′ 485 486 R. 3 W. 1730 000 FEET R. 2 W. 488 117°07′30″

33°45′ — 3734000m N. — 3734

3733 — 3732 — 3731 — 3730 — 42′30″ — 3728 — 3726 — 3725 — 40′ — 3724 — 3723 — 540 000 FEET — 3722 — 3721000m N. — 33°37′30″

T. 5 S. T. 6 S.

570 000 FEET

Mapped, edited, and published by the Geological Survey

Control by USGS and USC&GS

Topography from aerial photographs by multiplex methods and by plane-table surveys 1953. Aerial photographs taken 1951

Polyconic projection. 1927 North American datum
10,000-foot grid based on California coordinate system, zone 6

Unchecked elevations are shown in brown

1000-meter Universal Transverse Mercator grid ticks, zone 11, shown in blue

To place on the predicted North American Datum 1983 move the projection lines 82 meters east as shown by dashed corner ticks

GN MN 0°06′ 2 MILS 14½° 258 MILS

UTM GRID AND 1979 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:24000

1 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 5 0 1 KILOMETER

CONTOUR INTERVAL 20 FEET
DOTTED LINES REPRESENT HALF-INTERVAL CONTOURS
NATIONAL GEODETIC VERTICAL DATUM OF 1929

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

CALIF
QUADRANGLE LOCATION

Revisions shown in purple and woodland compiled from aerial photographs taken 1976 and other source data
This information not field checked. Map edited 1979

Purple tint indicates extension of urban areas

ROAD CLASSIFICATION

Primary highway, all weather, hard surface
Secondary highway, all weather, hard surface
Light-duty road, all weather, improved surface
Unimproved road, fair or dry weather
Interstate Route U. S. Route State Route

ROMOLAND, CALIF.

N3337.5—W11707.5/7.5

1953
PHOTOREVISED 1979
DMA 2551 II NW—SERIES V895

INTERIOR—GEOLOGICAL SURVEY, RESTON, VIRGINIA—1985

APPENDIX

C

Motte Rancon Distribution Center
26340 Trumble Road
ROMOLAND, CA 92585

Inquiry Number: 5269785.2s
April 24, 2018

The EDR Radius Map™ Report with GeoCheck®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

TABLE OF CONTENTS

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-14) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

26340 TRUMBLE ROAD
ROMOLAND, CA 92585

COORDINATES

Latitude (North):	33.7388990 - 33° 44' 20.03''
Longitude (West):	117.1836790 - 117° 11' 1.24''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	482985.5
UTM Y (Meters):	3733027.8
Elevation:	1431 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	5641314 ROMOLAND, CA
Version Date:	2012
North Map:	5641330 PERRIS, CA
Version Date:	2012

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140603, 20140530
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
26340 TRUMBLE ROAD
ROMOLAND, CA 92585

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
A1	NORTH COUNTY SAND &		US MINES	Higher	858, 0.162, NE
A2	NORTH COUNTY SAND &		US MINES	Higher	859, 0.163, NE
A3	NORTH COUNTY SAND &		US MINES	Higher	859, 0.163, NE
A4	NORTH COUNTY SAND &		US MINES	Higher	859, 0.163, NE
B5	FAB-TECH 17	26227 SHERMAN RD	ABANDONED MINES	Higher	1105, 0.209, NE
B6	FAB-TECH 49	26227 SHERMAN RD	ABANDONED MINES	Higher	1105, 0.209, NE
B7	FAB-TECH 18	26227 SHERMAN RD	ABANDONED MINES	Higher	1105, 0.209, NE
B8	FAB-TECH 45	26227 SHERMAN RD	ABANDONED MINES	Higher	1105, 0.209, NE
C9	CHANEY'S AUTO	27411 ETHANAC ROAD	LUST, HIST CORTESE	Higher	1429, 0.271, NNE
C10	CHANEY'S AUTOMOTIVE	27411 ETHANAC ROAD	LUST	Higher	1429, 0.271, NNE
11	NEILL #39;S RECYCLIN	26026 SHERMAN RD	SWRCY, NPDES	Higher	1663, 0.315, NE
12	THE CLUB K-8 SCHOOL	EVANS ROAD/NOVA LANE	ENVIROSTOR, SCH	Lower	4596, 0.870, WSW

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL ---------- National Priority List
Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ---------- National Priority List Deletions

Federal CERCLIS list

FEDERAL FACILITY ---------- Federal Facility Site Information listing
SEMS ---------- Superfund Enterprise Management System

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE ---------- Superfund Enterprise Management System Archive

Federal RCRA CORRACTS facilities list

CORRACTS ---------- Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ---------- RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG ---------- RCRA - Large Quantity Generators
RCRA-SQG ---------- RCRA - Small Quantity Generators
RCRA-CESQG ---------- RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

LUCIS ---------- Land Use Control Information System
US ENG CONTROLS ---------- Engineering Controls Sites List

US INST CONTROL Sites with Institutional Controls

Federal ERNS list

ERNS Emergency Response Notification System

State- and tribal - equivalent NPL

RESPONSE State Response Sites

State and tribal landfill and/or solid waste disposal site lists

SWF/LF Solid Waste Information System

State and tribal leaking storage tank lists

INDIAN LUST Leaking Underground Storage Tanks on Indian Land
SLIC Statewide SLIC Cases

State and tribal registered storage tank lists

FEMA UST Underground Storage Tank Listing
UST Active UST Facilities
AST Aboveground Petroleum Storage Tank Facilities
INDIAN UST Underground Storage Tanks on Indian Land

State and tribal voluntary cleanup sites

INDIAN VCP Voluntary Cleanup Priority Listing
VCP Voluntary Cleanup Program Properties

State and tribal Brownfields sites

BROWNFIELDS Considered Brownfieds Sites Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT Waste Management Unit Database
HAULERS Registered Waste Tire Haulers Listing
INDIAN ODI Report on the Status of Open Dumps on Indian Lands
DEBRIS REGION 9 Torres Martinez Reservation Illegal Dump Site Locations
ODI Open Dump Inventory
IHS OPEN DUMPS Open Dumps on Indian Land

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL Delisted National Clandestine Laboratory Register
HIST Cal-Sites Historical Calsites Database

SCH ..... School Property Evaluation Program
CDL ..... Clandestine Drug Labs
Toxic Pits ..... Toxic Pits Cleanup Act Sites
US CDL ..... National Clandestine Laboratory Register

Local Lists of Registered Storage Tanks

SWEEPS UST ..... SWEEPS UST Listing
HIST UST ..... Hazardous Substance Storage Container Database
CA FID UST ..... Facility Inventory Database

Local Land Records

LIENS ..... Environmental Liens Listing
LIENS 2 ..... CERCLA Lien Information
DEED ..... Deed Restriction Listing

Records of Emergency Release Reports

HMIRS ..... Hazardous Materials Information Reporting System
CHMIRS ..... California Hazardous Material Incident Report System
LDS ..... Land Disposal Sites Listing
MCS ..... Military Cleanup Sites Listing
SPILLS 90 ..... SPILLS 90 data from FirstSearch

Other Ascertainable Records

RCRA NonGen / NLR ..... RCRA - Non Generators / No Longer Regulated
FUDS ..... Formerly Used Defense Sites
DOD ..... Department of Defense Sites
SCRD DRYCLEANERS ..... State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR ..... Financial Assurance Information
EPA WATCH LIST ..... EPA WATCH LIST
2020 COR ACTION ..... 2020 Corrective Action Program List
TSCA ..... Toxic Substances Control Act
TRIS ..... Toxic Chemical Release Inventory System
SSTS ..... Section 7 Tracking Systems
ROD ..... Records Of Decision
RMP ..... Risk Management Plans
RAATS ..... RCRA Administrative Action Tracking System
PRP ..... Potentially Responsible Parties
PADS ..... PCB Activity Database System
ICIS ..... Integrated Compliance Information System
FTTS ..... FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
MLTS ..... Material Licensing Tracking System
COAL ASH DOE ..... Steam-Electric Plant Operation Data
COAL ASH EPA ..... Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER ..... PCB Transformer Registration Database
RADINFO ..... Radiation Information Database
HIST FTTS ..... FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS ..... Incident and Accident Data
CONSENT ..... Superfund (CERCLA) Consent Decrees
INDIAN RESERV ..... Indian Reservations
FUSRAP ..... Formerly Utilized Sites Remedial Action Program

UMTRA ---- Uranium Mill Tailings Sites
LEAD SMELTERS ---- Lead Smelter Sites
US AIRS ---- Aerometric Information Retrieval System Facility Subsystem
FINDS ---- Facility Index System/Facility Registry System
UXO ---- Unexploded Ordnance Sites
ECHO ---- Enforcement & Compliance History Information
DOCKET HWC ---- Hazardous Waste Compliance Docket Listing
FUELS PROGRAM ---- EPA Fuels Program Registered Listing
CA BOND EXP. PLAN ---- Bond Expenditure Plan
Cortese ---- "Cortese" Hazardous Waste & Substances Sites List
CUPA Listings ---- CUPA Resources List
DRYCLEANERS ---- Cleaner Facilities
EMI ---- Emissions Inventory Data
ENF ---- Enforcement Action Listing
Financial Assurance ---- Financial Assurance Information Listing
HAZNET ---- Facility and Manifest Data
ICE ---- ICE
HWP ---- EnviroStor Permitted Facilities Listing
HWT ---- Registered Hazardous Waste Transporter Database
MINES ---- Mines Site Location Listing
MWMP ---- Medical Waste Management Program Listing
NPDES ---- NPDES Permits Listing
PEST LIC ---- Pesticide Regulation Licenses Listing
PROC ---- Certified Processors Database
Notify 65 ---- Proposition 65 Records
UIC ---- UIC Listing
WASTEWATER PITS ---- Oil Wastewater Pits Listing
WDS ---- Waste Discharge System
WIP ---- Well Investigation Program Case List

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP ---- EDR Proprietary Manufactured Gas Plants
EDR Hist Auto ---- EDR Exclusive Historical Auto Stations
EDR Hist Cleaner ---- EDR Exclusive Historical Cleaners

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF ---- Recovered Government Archive Solid Waste Facilities List
RGA LUST ---- Recovered Government Archive Leaking Underground Storage Tank

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

EXECUTIVE SUMMARY

STANDARD ENVIRONMENTAL RECORDS

State- and tribal - equivalent CERCLIS

ENVIROSTOR: The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

A review of the ENVIROSTOR list, as provided by EDR, and dated 01/30/2018 has revealed that there is 1 ENVIROSTOR site within approximately 1 mile of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
THE CLUB K-8 SCHOOL	***EVANS ROAD/NOVA LANE***	***WSW 1/2 - 1 (0.870 mi.)***	***12***	***35***
Facility Id: 33010067				
Status: No Further Action				

State and tribal leaking storage tank lists

LUST: Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

A review of the LUST list, as provided by EDR, has revealed that there are 2 LUST sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
CHANEY'S AUTO	***27411 ETHANAC ROAD***	***NNE 1/4 - 1/2 (0.271 mi.)***	***C9***	***28***
Database: LUST REG 8, Date of Government Version: 02/14/2005				
Facility Status: Preliminary site assessment underway				
Global ID: T0606500332				
CHANEY'S AUTOMOTIVE	27411 ETHANAC ROAD	NNE 1/4 - 1/2 (0.271 mi.)	C10	30
Database: RIVERSIDE CO. LUST, Date of Government Version: 01/18/2018				
Database: LUST, Date of Government Version: 03/12/2018				
Status: Completed - Case Closed				
Facility Id: 93620				
Global Id: T0606500332				
Facility Status: 9				

ADDITIONAL ENVIRONMENTAL RECORDS

Local Lists of Landfill / Solid Waste Disposal Sites

SWRCY: A listing of recycling facilities in California.

A review of the SWRCY list, as provided by EDR, and dated 12/11/2017 has revealed that there is 1 SWRCY site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
NEILL #39;S RECYCLIN Cert Id: RC137839.001	***26026 SHERMAN RD***	***NE 1/4 - 1/2 (0.315 mi.)***	***11***	***31***

Other Ascertainable Records

US MINES: Mines Master Index File. The source of this database is the Dept. of Labor, Mine Safety and Health Administration.

A review of the US MINES list, as provided by EDR, has revealed that there are 4 US MINES sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
NORTH COUNTY SAND & Database: US MINES, Date of Government Version: 10/29/2017		NE 1/8 - 1/4 (0.162 mi.)	A1	8
NORTH COUNTY SAND & Database: US MINES, Date of Government Version: 10/29/2017		NE 1/8 - 1/4 (0.163 mi.)	A2	14
NORTH COUNTY SAND & Database: US MINES, Date of Government Version: 10/29/2017		NE 1/8 - 1/4 (0.163 mi.)	A3	20
NORTH COUNTY SAND & Database: US MINES, Date of Government Version: 10/29/2017		NE 1/8 - 1/4 (0.163 mi.)	A4	26

ABANDONED MINES: An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

A review of the ABANDONED MINES list, as provided by EDR, and dated 12/20/2017 has revealed that there are 4 ABANDONED MINES sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
FAB-TECH 17	26227 SHERMAN RD	NE 1/8 - 1/4 (0.209 mi.)	B5	26
FAB-TECH 49	26227 SHERMAN RD	NE 1/8 - 1/4 (0.209 mi.)	B6	27
FAB-TECH 18	26227 SHERMAN RD	NE 1/8 - 1/4 (0.209 mi.)	B7	27
FAB-TECH 45	26227 SHERMAN RD	NE 1/8 - 1/4 (0.209 mi.)	B8	28

EXECUTIVE SUMMARY

HIST CORTESE: The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

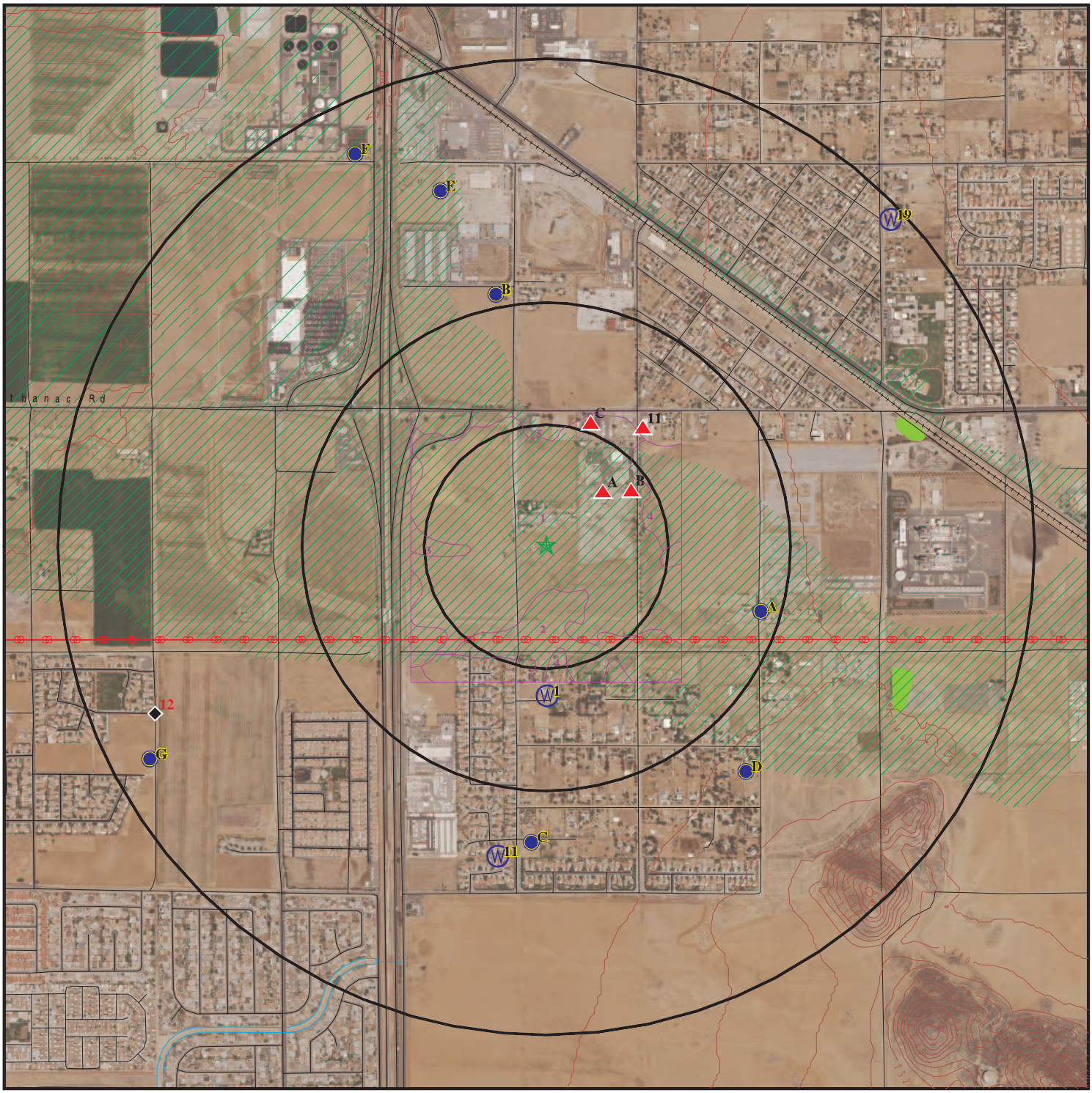
A review of the HIST CORTESE list, as provided by EDR, and dated 04/01/2001 has revealed that there is 1 HIST CORTESE site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
CHANEY'S AUTO Reg Id: 083302297T	***27411 ETHANAC ROAD***	***NNE 1/4 - 1/2 (0.271 mi.)***	***C9***	***28***

EXECUTIVE SUMMARY

There were no unmapped sites in this report.

OVERVIEW MAP - 5269785.2S



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites

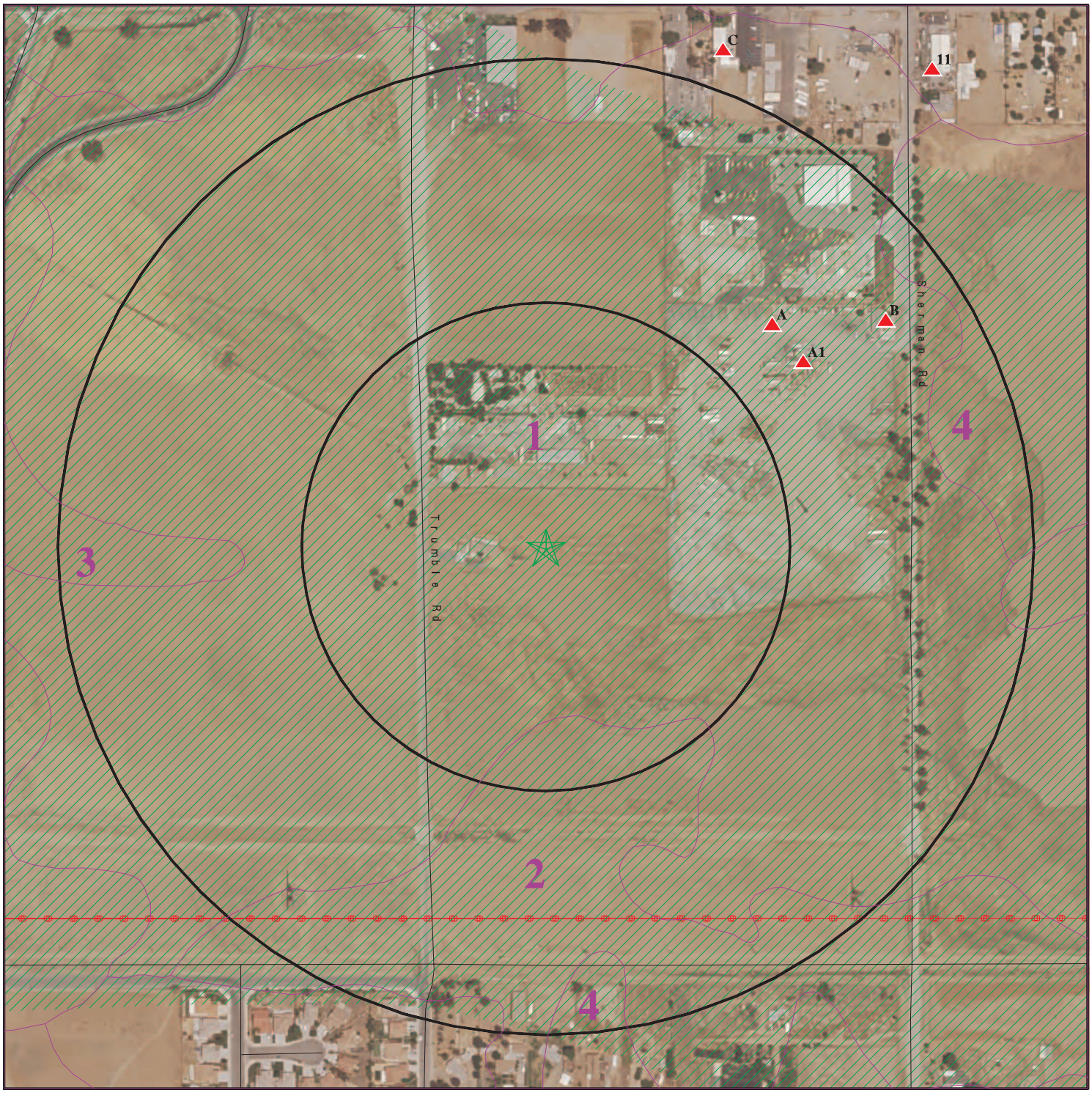
0 1/4 1/2 1 Miles

- Indian Reservations BIA
- Power transmission lines
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- State Wetlands
- Upgradient Area
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Motte Rancon Distribution Center	CLIENT:	Rainwater Consulting
ADDRESS:	26340 Trumble Road ROMOLAND CA 92585	CONTACT:	Tim Doyle
		INQUIRY #:	5269785.2s
LAT/LONG:	33.738899 / 117.183679	DATE:	April 24, 2018 1:27 pm

DETAIL MAP - 5269785.2S



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- 100-year flood zone
- 500-year flood zone
- Areas of Concern

0 1/16 1/8 1/4 Miles

N

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Motte Rancon Distribution Center	CLIENT:	Rainwater Consulting
ADDRESS:	26340 Trumble Road ROMOLAND CA 92585	CONTACT:	Tim Doyle
		INQUIRY #:	5269785.2s
LAT/LONG:	33.738899 / 117.183679	DATE:	April 24, 2018 1:30 pm

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	TP		NR	NR	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site list								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-CESQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	TP		NR	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE	1.000		0	0	0	0	NR	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR	1.000		0	0	0	1	NR	1
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LUST	0.500		0	0	2	NR	NR	2

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST	0.500		0	0	0	NR	NR	0
SLIC	0.500		0	0	0	NR	NR	0
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal voluntary cleanup sites								
INDIAN VCP	0.500		0	0	0	NR	NR	0
VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
WMUDS/SWAT	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	1	NR	NR	1
HAULERS	TP		NR	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	TP		NR	NR	NR	NR	NR	0
HIST Cal-Sites	1.000		0	0	0	0	NR	0
SCH	0.250		0	0	NR	NR	NR	0
CDL	TP		NR	NR	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
US CDL	TP		NR	NR	NR	NR	NR	0
Local Lists of Registered Storage Tanks								
SWEEPS UST	0.250		0	0	NR	NR	NR	0
HIST UST	0.250		0	0	NR	NR	NR	0
CA FID UST	0.250		0	0	NR	NR	NR	0
Local Land Records								
LIENS	TP		NR	NR	NR	NR	NR	0
LIENS 2	TP		NR	NR	NR	NR	NR	0
DEED	0.500		0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
CHMIRS	TP		NR	NR	NR	NR	NR	0
LDS	TP		NR	NR	NR	NR	NR	0
MCS	TP		NR	NR	NR	NR	NR	0
SPILLS 90	TP		NR	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	TP		NR	NR	NR	NR	NR	0
EPA WATCH LIST	TP		NR	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	TP		NR	NR	NR	NR	NR	0
TRIS	TP		NR	NR	NR	NR	NR	0
SSTS	TP		NR	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	TP		NR	NR	NR	NR	NR	0
RAATS	TP		NR	NR	NR	NR	NR	0
PRP	TP		NR	NR	NR	NR	NR	0
PADS	TP		NR	NR	NR	NR	NR	0
ICIS	TP		NR	NR	NR	NR	NR	0
FTTS	TP		NR	NR	NR	NR	NR	0
MLTS	TP		NR	NR	NR	NR	NR	0
COAL ASH DOE	TP		NR	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	TP		NR	NR	NR	NR	NR	0
RADINFO	TP		NR	NR	NR	NR	NR	0
HIST FTTS	TP		NR	NR	NR	NR	NR	0
DOT OPS	TP		NR	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	TP		NR	NR	NR	NR	NR	0
US AIRS	TP		NR	NR	NR	NR	NR	0
US MINES	0.250		0	4	NR	NR	NR	4
ABANDONED MINES	0.250		0	4	NR	NR	NR	4
FINDS	TP		NR	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
ECHO	TP		NR	NR	NR	NR	NR	0
DOCKET HWC	TP		NR	NR	NR	NR	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
Cortese	0.500		0	0	0	NR	NR	0
CUPA Listings	0.250		0	0	NR	NR	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
EMI	TP		NR	NR	NR	NR	NR	0
ENF	TP		NR	NR	NR	NR	NR	0
Financial Assurance	TP		NR	NR	NR	NR	NR	0
HAZNET	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
ICE	TP		NR	NR	NR	NR	NR	0
HIST CORTESE	0.500		0	0	1	NR	NR	1
HWP	1.000		0	0	0	0	NR	0
HWT	0.250		0	0	NR	NR	NR	0
MINES	0.250		0	0	NR	NR	NR	0
MWMP	0.250		0	0	NR	NR	NR	0
NPDES	TP		NR	NR	NR	NR	NR	0
PEST LIC	TP		NR	NR	NR	NR	NR	0
PROC	0.500		0	0	0	NR	NR	0
Notify 65	1.000		0	0	0	0	NR	0
UIC	TP		NR	NR	NR	NR	NR	0
WASTEWATER PITS	0.500		0	0	0	NR	NR	0
WDS	TP		NR	NR	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LF	TP		NR	NR	NR	NR	NR	0
RGA LUST	TP		NR	NR	NR	NR	NR	0
- Totals --		0	0	8	4	1	0	13

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

A1
NE
1/8-1/4
0.162 mi.
858 ft.

NORTH COUNTY SAND & GRAVEL INC
RIVERSIDE (County), CA
Site 1 of 4 in cluster A

US MINES **1016469061**
N/A

Relative:
Higher

Actual:
1432 ft.

US MINES:

Mine ID:	0405517
SIC code(s):	144200 000000 000000 000000 000000 000000
Entity name:	FAB-TECH 17
Company:	NORTH COUNTY SAND & GRAVEL INC
Status:	4
Status date:	20120702
Operation Class:	non-Coal Mining
Number of shops:	0
Number of plants:	0
Latitude:	33 44 25
Longitude:	117 10 53

Violations Details:

Violation Number:	6440074
Date Issued:	11/03/2008
Mine Status:	Abandoned
Status Date:	07/02/2012
Action Type:	104(a)
Date Abated:	11/04/2008
Citation/Order:	Citation
Sig and Sub Designation:	N
Proposed Penalty:	100.00
Paid Penalty:	100.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	100.00
Year:	2008

Violation Number:	8560322
Date Issued:	10/29/2010
Mine Status:	Abandoned
Status Date:	07/02/2012
Action Type:	104(a)
Date Abated:	11/03/2010
Citation/Order:	Citation
Sig and Sub Designation:	N
Proposed Penalty:	100.00
Paid Penalty:	100.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	100.00
Year:	2010

Violation Number:	8560323
Date Issued:	10/29/2010
Mine Status:	Abandoned
Status Date:	07/02/2012
Action Type:	104(a)
Date Abated:	11/02/2010
Citation/Order:	Citation
Sig and Sub Designation:	N
Proposed Penalty:	162.00

NORTH COUNTY SAND & GRAVEL INC (Continued) **1016469061**

Paid Penalty: 162.00
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 162.00
Year: 2010

Violation Number: 8560324
Date Issued: 10/29/2010
Mine Status: Abandoned
Status Date: 07/02/2012
Action Type: 104(a)
Date Abated: 11/03/2010
Citation/Order: Citation
Sig and Sub Designation: N
Proposed Penalty: 100.00
Paid Penalty: 100.00
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 100.00
Year: 2010

Violation Number: 8560325
Date Issued: 10/29/2010
Mine Status: Abandoned
Status Date: 07/02/2012
Action Type: 104(a)
Date Abated: 11/02/2010
Citation/Order: Citation
Sig and Sub Designation: Y
Proposed Penalty: 807.00
Paid Penalty: 807.00
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 807.00
Year: 2010

Violation Number: 8560326
Date Issued: 10/29/2010
Mine Status: Abandoned
Status Date: 07/02/2012
Action Type: 104(a)
Date Abated: 11/02/2010
Citation/Order: Citation
Sig and Sub Designation: N
Proposed Penalty: 100.00
Paid Penalty: 100.00
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 100.00
Year: 2010

Violation Number: 8560327
Date Issued: 10/29/2010
Mine Status: Abandoned
Status Date: 07/02/2012
Action Type: 104(a)
Date Abated: 10/29/2010

NORTH COUNTY SAND & GRAVEL INC (Continued) **1016469061**

Citation/Order: Citation
Sig and Sub Designation: Y
Proposed Penalty: 807.00
Paid Penalty: 807.00
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 807.00
Year: 2010

Violation Number: 6485336
Date Issued: 09/25/2009
Mine Status: Abandoned
Status Date: 07/02/2012
Action Type: 104(a)
Date Abated: 09/25/2009
Citation/Order: Citation
Sig and Sub Designation: N
Proposed Penalty: 100.00
Paid Penalty: 100.00
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 100.00
Year: 2009

Violation Number: 6485334
Date Issued: 09/24/2009
Mine Status: Abandoned
Status Date: 07/02/2012
Action Type: 104(a)
Date Abated: 09/24/2009
Citation/Order: Citation
Sig and Sub Designation: Y
Proposed Penalty: 100.00
Paid Penalty: 100.00
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 100.00
Year: 2009

Violation Number: 6485335
Date Issued: 09/24/2009
Mine Status: Abandoned
Status Date: 07/02/2012
Action Type: 104(a)
Date Abated: 10/01/2009
Citation/Order: Citation
Sig and Sub Designation: N
Proposed Penalty: 100.00
Paid Penalty: 100.00
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 100.00
Year: 2009

Violation Number: 6485333
Date Issued: 09/24/2009
Mine Status: Abandoned

NORTH COUNTY SAND & GRAVEL INC (Continued) **1016469061**

Status Date:	07/02/2012
Action Type:	104(a)
Date Abated:	10/01/2009
Citation/Order:	Citation
Sig and Sub Designation:	Y
Proposed Penalty:	362.00
Paid Penalty:	362.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	362.00
Year:	2009

Violation Number:	6485332
Date Issued:	09/24/2009
Mine Status:	Abandoned
Status Date:	07/02/2012
Action Type:	104(a)
Date Abated:	10/01/2009
Citation/Order:	Citation
Sig and Sub Designation:	Y
Proposed Penalty:	100.00
Paid Penalty:	100.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	100.00
Year:	2009

Violation Number:	8560400
Date Issued:	07/06/2011
Mine Status:	Abandoned
Status Date:	07/02/2012
Action Type:	104(a)
Date Abated:	07/11/2011
Citation/Order:	Citation
Sig and Sub Designation:	N
Proposed Penalty:	100.00
Paid Penalty:	100.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	100.00
Year:	2011

Violation Number:	7980691
Date Issued:	05/04/2009
Mine Status:	Abandoned
Status Date:	07/02/2012
Action Type:	104(a)
Date Abated:	05/05/2009
Citation/Order:	Citation
Sig and Sub Designation:	N
Proposed Penalty:	100.00
Paid Penalty:	100.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	100.00
Year:	2009

NORTH COUNTY SAND & GRAVEL INC (Continued) **1016469061**

Violation Number:	8560384
Date Issued:	05/02/2011
Mine Status:	Abandoned
Status Date:	07/02/2012
Action Type:	104(a)
Date Abated:	05/03/2011
Citation/Order:	Citation
Sig and Sub Designation:	N
Proposed Penalty:	100.00
Paid Penalty:	100.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	100.00
Year:	2011

Violation Number:	6339848
Date Issued:	04/15/2002
Mine Status:	Abandoned
Status Date:	07/02/2012
Action Type:	104(a)
Date Abated:	04/15/2002
Citation/Order:	Citation
Sig and Sub Designation:	N
Proposed Penalty:	55.00
Paid Penalty:	55.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	55.00
Year:	2002

Violation Number:	6339849
Date Issued:	04/15/2002
Mine Status:	Abandoned
Status Date:	07/02/2012
Action Type:	104(a)
Date Abated:	04/16/2002
Citation/Order:	Citation
Sig and Sub Designation:	N
Proposed Penalty:	55.00
Paid Penalty:	55.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	55.00
Year:	2002

Violation Number:	6339850
Date Issued:	04/15/2002
Mine Status:	Abandoned
Status Date:	07/02/2012
Action Type:	104(g)(1)
Date Abated:	04/17/2002
Citation/Order:	Order
Sig and Sub Designation:	Y
Proposed Penalty:	231.00
Paid Penalty:	231.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed

NORTH COUNTY SAND & GRAVEL INC (Continued) **1016469061**

Assessment Amount:	231.00
Year:	2002

Violation Number:	6339841
Date Issued:	04/04/2002
Mine Status:	Abandoned
Status Date:	07/02/2012
Action Type:	104(d)(1)
Date Abated:	04/15/2002
Citation/Order:	Order
Sig and Sub Designation:	Y
Proposed Penalty:	800.00
Paid Penalty:	800.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	800.00
Year:	2002

Violation Number:	6339842
Date Issued:	04/04/2002
Mine Status:	Abandoned
Status Date:	07/02/2012
Action Type:	104(d)(1)
Date Abated:	04/15/2002
Citation/Order:	Order
Sig and Sub Designation:	Y
Proposed Penalty:	800.00
Paid Penalty:	800.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	800.00
Year:	2002

NORTH COUNTY SAND & GRAVEL INC (Continued) **1016469061**

Click this hyperlink while viewing on your computer to access
30 additional US_MINES: record(s) in the EDR Site Report.

A2 **NORTH COUNTY SAND & GRAVEL INC** **US MINES** **1016469062**
NE **N/A**
1/8-1/4 **RIVERSIDE (County), CA**
0.163 mi.
859 ft. **Site 2 of 4 in cluster A**

Relative:
Higher

Actual:
1432 ft.

US MINES:

Mine ID:	0405518
SIC code(s):	144200 000000 000000 000000 000000 000000
Entity name:	FAB-TECH 18
Company:	NORTH COUNTY SAND & GRAVEL INC
Status:	4
Status date:	20170104
Operation Class:	non-Coal Mining
Number of shops:	0
Number of plants:	0
Latitude:	33 44 26
Longitude:	117 10 54

Violations Details:

Violation Number:	7992986
Date Issued:	12/17/2007
Mine Status:	Active
Status Date:	12/02/2014
Action Type:	104(g)(1)
Date Abated:	12/18/2007
Citation/Order:	Order
Sig and Sub Designation:	Y
Proposed Penalty:	971.00
Paid Penalty:	971.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	971.00
Year:	2007

Violation Number:	7992987
Date Issued:	12/17/2007
Mine Status:	Active
Status Date:	12/02/2014
Action Type:	104(a)
Date Abated:	01/28/2008
Citation/Order:	Citation
Sig and Sub Designation:	N
Proposed Penalty:	176.00
Paid Penalty:	176.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	176.00
Year:	2007

Violation Number:	7992985
Date Issued:	12/17/2007
Mine Status:	Active
Status Date:	12/02/2014

NORTH COUNTY SAND & GRAVEL INC (Continued) **1016469062**

Action Type:	104(a)
Date Abated:	12/17/2007
Citation/Order:	Citation
Sig and Sub Designation:	N
Proposed Penalty:	100.00
Paid Penalty:	100.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	100.00
Year:	2007

Violation Number:	8874752
Date Issued:	11/29/2016
Mine Status:	Abandoned
Status Date:	01/04/2017
Action Type:	104(a)
Date Abated:	11/29/2016
Citation/Order:	Citation
Sig and Sub Designation:	N
Proposed Penalty:	114.00
Paid Penalty:	114.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	114.00
Year:	2016

Violation Number:	6354144
Date Issued:	11/05/2003
Mine Status:	Active
Status Date:	12/02/2014
Action Type:	104(g)(1)
Date Abated:	11/06/2003
Citation/Order:	Order
Sig and Sub Designation:	Y
Proposed Penalty:	324
Paid Penalty:	324
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	324
Year:	2003

Violation Number:	8788706
Date Issued:	10/14/2015
Mine Status:	Active
Status Date:	12/02/2014
Action Type:	104(a)
Date Abated:	10/15/2015
Citation/Order:	Citation
Sig and Sub Designation:	N
Proposed Penalty:	362.00
Paid Penalty:	362.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	362.00
Year:	2015

Violation Number:	8788705

NORTH COUNTY SAND & GRAVEL INC (Continued) **1016469062**

Date Issued:	10/14/2015
Mine Status:	Active
Status Date:	12/02/2014
Action Type:	104(a)
Date Abated:	10/15/2015
Citation/Order:	Citation
Sig and Sub Designation:	Y
Proposed Penalty:	807.00
Paid Penalty:	807.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	807.00
Year:	2015

Violation Number:	8788704
Date Issued:	10/14/2015
Mine Status:	Active
Status Date:	12/02/2014
Action Type:	104(a)
Date Abated:	10/15/2015
Citation/Order:	Citation
Sig and Sub Designation:	N
Proposed Penalty:	162.00
Paid Penalty:	162.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	162.00
Year:	2015

Violation Number:	8689874
Date Issued:	09/18/2013
Mine Status:	Active
Status Date:	12/02/2014
Action Type:	104(a)
Date Abated:	09/19/2013
Citation/Order:	Citation
Sig and Sub Designation:	N
Proposed Penalty:	162
Paid Penalty:	162
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	162
Year:	2013

Violation Number:	8689876
Date Issued:	09/18/2013
Mine Status:	Active
Status Date:	12/02/2014
Action Type:	104(a)
Date Abated:	09/18/2013
Citation/Order:	Citation
Sig and Sub Designation:	N
Proposed Penalty:	162
Paid Penalty:	162
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	162

NORTH COUNTY SAND & GRAVEL INC (Continued) **1016469062**

Year: 2013

Violation Number: 8689875
Date Issued: 09/18/2013
Mine Status: Active
Status Date: 12/02/2014
Action Type: 104(a)
Date Abated: 09/18/2013
Citation/Order: Citation
Sig and Sub Designation: Y
Proposed Penalty: 807
Paid Penalty: 807
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 807
Year: 2013

Violation Number: 6380825
Date Issued: 09/07/2005
Mine Status: Active
Status Date: 12/02/2014
Action Type: 104(a)
Date Abated: 09/08/2005
Citation/Order: Citation
Sig and Sub Designation: N
Proposed Penalty: 60.00
Paid Penalty: 60.00
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 60.00
Year: 2005

Violation Number: 6380826
Date Issued: 09/07/2005
Mine Status: Active
Status Date: 12/02/2014
Action Type: 104(a)
Date Abated: 09/08/2005
Citation/Order: Citation
Sig and Sub Designation: N
Proposed Penalty: 60.00
Paid Penalty: 60.00
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 60.00
Year: 2005

Violation Number: 6380827
Date Issued: 09/07/2005
Mine Status: Active
Status Date: 12/02/2014
Action Type: 104(a)
Date Abated: 09/08/2005
Citation/Order: Citation
Sig and Sub Designation: N
Proposed Penalty: 60.00
Paid Penalty: 60.00

NORTH COUNTY SAND & GRAVEL INC (Continued) **1016469062**

Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 60.00
Year: 2005

Violation Number: 6380828
Date Issued: 09/07/2005
Mine Status: Active
Status Date: 12/02/2014
Action Type: 104(a)
Date Abated: 09/08/2005
Citation/Order: Citation
Sig and Sub Designation: N
Proposed Penalty: 60.00
Paid Penalty: 60.00
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 60.00
Year: 2005

Violation Number: 6440040
Date Issued: 09/05/2008
Mine Status: Active
Status Date: 12/02/2014
Action Type: 104(a)
Date Abated: 09/05/2008
Citation/Order: Citation
Sig and Sub Designation: N
Proposed Penalty: 100.00
Paid Penalty: 100.00
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 100.00
Year: 2008

Violation Number: 7980726
Date Issued: 09/02/2009
Mine Status: Active
Status Date: 12/02/2014
Action Type: 104(a)
Date Abated: 09/17/2009
Citation/Order: Citation
Sig and Sub Designation: N
Proposed Penalty: 100.00
Paid Penalty: 100.00
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 100.00
Year: 2009

Violation Number: 7980724
Date Issued: 09/01/2009
Mine Status: Active
Status Date: 12/02/2014
Action Type: 104(a)
Date Abated: 09/03/2009
Citation/Order: Citation

NORTH COUNTY SAND & GRAVEL INC (Continued) **1016469062**

Sig and Sub Designation: N
Proposed Penalty: 100.00
Paid Penalty: 100.00
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 100.00
Year: 2009

Violation Number: 7980725
Date Issued: 09/01/2009
Mine Status: Active
Status Date: 12/02/2014
Action Type: 104(a)
Date Abated: 09/01/2009
Citation/Order: Citation
Sig and Sub Designation: N
Proposed Penalty: 100.00
Paid Penalty: 100.00
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 100.00
Year: 2009

Violation Number: 8689480
Date Issued: 08/30/2012
Mine Status: Active
Status Date: 12/02/2014
Action Type: 104(a)
Date Abated: 09/07/2012
Citation/Order: Citation
Sig and Sub Designation: N
Proposed Penalty: 100
Paid Penalty: 100
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 100
Year: 2012

NORTH COUNTY SAND & GRAVEL INC (Continued) **1016469062**

Click this hyperlink while viewing on your computer to access
79 additional US_MINES: record(s) in the EDR Site Report.

A3 **NORTH COUNTY SAND & GRAVEL INC** **US MINES** **1016469094**
NE **N/A**
1/8-1/4 **SAN BERNARDINO (County), CA**
0.163 mi.
859 ft. **Site 3 of 4 in cluster A**

Relative:
Higher

Actual:
1432 ft.

US MINES:

Mine ID:	0405632
SIC code(s):	144200 000000 000000 000000 000000 000000
Entity name:	ROADRUNNER 32
Company:	NORTH COUNTY SAND & GRAVEL INC
Status:	2
Status date:	20170105
Operation Class:	non-Coal Mining
Number of shops:	0
Number of plants:	0
Latitude:	33 44 26
Longitude:	117 10 54

Violations Details:

Violation Number:	8607598
Date Issued:	12/27/2012
Mine Status:	Abandoned
Status Date:	03/11/2014
Action Type:	104(a)
Date Abated:	Not reported
Citation/Order:	Citation
Sig and Sub Designation:	N
Proposed Penalty:	Not reported
Paid Penalty:	Not reported
Assessment Status code:	Not reported
Assess. Case Status code:	Not reported
Assessment Amount:	Not reported
Year:	2012

Violation Number:	6485394
Date Issued:	12/15/2009
Mine Status:	Abandoned
Status Date:	03/11/2014
Action Type:	104(a)
Date Abated:	12/15/2009
Citation/Order:	Citation
Sig and Sub Designation:	Y
Proposed Penalty:	807.00
Paid Penalty:	807.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	807.00
Year:	2009

Violation Number:	6485390
Date Issued:	12/15/2009
Mine Status:	Abandoned
Status Date:	03/11/2014

NORTH COUNTY SAND & GRAVEL INC (Continued) **1016469094**

Action Type:	104(a)
Date Abated:	12/15/2009
Citation/Order:	Citation
Sig and Sub Designation:	N
Proposed Penalty:	108.00
Paid Penalty:	108.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	108.00
Year:	2009

Violation Number:	6485392
Date Issued:	12/15/2009
Mine Status:	Abandoned
Status Date:	03/11/2014
Action Type:	104(a)
Date Abated:	12/16/2009
Citation/Order:	Citation
Sig and Sub Designation:	Y
Proposed Penalty:	807.00
Paid Penalty:	807.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	807.00
Year:	2009

Violation Number:	6485389
Date Issued:	12/15/2009
Mine Status:	Abandoned
Status Date:	03/11/2014
Action Type:	104(a)
Date Abated:	12/15/2009
Citation/Order:	Citation
Sig and Sub Designation:	N
Proposed Penalty:	108.00
Paid Penalty:	108.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	108.00
Year:	2009

Violation Number:	6485393
Date Issued:	12/15/2009
Mine Status:	Abandoned
Status Date:	03/11/2014
Action Type:	104(a)
Date Abated:	12/15/2009
Citation/Order:	Citation
Sig and Sub Designation:	Y
Proposed Penalty:	540.00
Paid Penalty:	540.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	540.00
Year:	2009

Violation Number:	8560328

NORTH COUNTY SAND & GRAVEL INC (Continued) **1016469094**

Date Issued:	11/03/2010
Mine Status:	Abandoned
Status Date:	03/11/2014
Action Type:	104(a)
Date Abated:	11/12/2010
Citation/Order:	Citation
Sig and Sub Designation:	Y
Proposed Penalty:	362.00
Paid Penalty:	362.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	362.00
Year:	2010

Violation Number:	8560329
Date Issued:	11/03/2010
Mine Status:	Abandoned
Status Date:	03/11/2014
Action Type:	104(a)
Date Abated:	11/12/2010
Citation/Order:	Citation
Sig and Sub Designation:	Y
Proposed Penalty:	362.00
Paid Penalty:	362.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	362.00
Year:	2010

Violation Number:	6440067
Date Issued:	10/21/2008
Mine Status:	Abandoned
Status Date:	03/11/2014
Action Type:	104(a)
Date Abated:	10/21/2008
Citation/Order:	Citation
Sig and Sub Designation:	N
Proposed Penalty:	100.00
Paid Penalty:	100.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	100.00
Year:	2008

Violation Number:	6440049
Date Issued:	10/02/2008
Mine Status:	Abandoned
Status Date:	03/11/2014
Action Type:	104(a)
Date Abated:	10/02/2008
Citation/Order:	Citation
Sig and Sub Designation:	N
Proposed Penalty:	100.00
Paid Penalty:	100.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	100.00

NORTH COUNTY SAND & GRAVEL INC (Continued) **1016469094**

Year: 2008

Violation Number: 6440669
Date Issued: 09/02/2008
Mine Status: Abandoned
Status Date: 03/11/2014
Action Type: 104(a)
Date Abated: 09/02/2008
Citation/Order: Citation
Sig and Sub Designation: N
Proposed Penalty: 100.00
Paid Penalty: 100.00
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 100.00
Year: 2008

Violation Number: 8607736
Date Issued: 06/28/2012
Mine Status: Abandoned
Status Date: 03/11/2014
Action Type: 104(a)
Date Abated: 07/02/2012
Citation/Order: Citation
Sig and Sub Designation: N
Proposed Penalty: 100
Paid Penalty: 100
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 100
Year: 2012

Violation Number: 8607733
Date Issued: 06/28/2012
Mine Status: Abandoned
Status Date: 03/11/2014
Action Type: 104(a)
Date Abated: 07/02/2012
Citation/Order: Citation
Sig and Sub Designation: Y
Proposed Penalty: 108
Paid Penalty: 108
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 108
Year: 2012

Violation Number: 8607735
Date Issued: 06/28/2012
Mine Status: Abandoned
Status Date: 03/11/2014
Action Type: 104(a)
Date Abated: 07/02/2012
Citation/Order: Citation
Sig and Sub Designation: N
Proposed Penalty: 100
Paid Penalty: 100

NORTH COUNTY SAND & GRAVEL INC (Continued) **1016469094**

Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 100
Year: 2012

Violation Number: 8607734
Date Issued: 06/28/2012
Mine Status: Abandoned
Status Date: 03/11/2014
Action Type: 104(a)
Date Abated: 07/02/2012
Citation/Order: Citation
Sig and Sub Designation: N
Proposed Penalty: 100
Paid Penalty: 100
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 100
Year: 2012

Violation Number: 6485481
Date Issued: 04/27/2010
Mine Status: Abandoned
Status Date: 03/11/2014
Action Type: 104(a)
Date Abated: 04/27/2010
Citation/Order: Citation
Sig and Sub Designation: N
Proposed Penalty: 108.00
Paid Penalty: 108.00
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 108.00
Year: 2010

Violation Number: 6485482
Date Issued: 04/27/2010
Mine Status: Abandoned
Status Date: 03/11/2014
Action Type: 104(a)
Date Abated: 04/27/2010
Citation/Order: Citation
Sig and Sub Designation: Y
Proposed Penalty: 1,795.00
Paid Penalty: 1,795.00
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 1,795.00
Year: 2010

Violation Number: 6485483
Date Issued: 04/27/2010
Mine Status: Abandoned
Status Date: 03/11/2014
Action Type: 104(a)
Date Abated: 04/27/2010
Citation/Order: Citation

NORTH COUNTY SAND & GRAVEL INC (Continued) **1016469094**

Sig and Sub Designation:	N
Proposed Penalty:	362.00
Paid Penalty:	362.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	362.00
Year:	2010

Violation Number:	7980688
Date Issued:	04/23/2009
Mine Status:	Abandoned
Status Date:	03/11/2014
Action Type:	104(a)
Date Abated:	05/05/2009
Citation/Order:	Citation
Sig and Sub Designation:	N
Proposed Penalty:	100.00
Paid Penalty:	100.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	100.00
Year:	2009

Violation Number:	7980682-00014193A
Date Issued:	04/16/2009
Mine Status:	Abandoned
Status Date:	03/11/2014
Action Type:	104(d)(1)
Date Abated:	04/27/2009
Citation/Order:	Order
Sig and Sub Designation:	Y
Proposed Penalty:	1,200.00
Paid Penalty:	0.00
Assessment Status code:	Received
Assess. Case Status code:	Proposed
Assessment Amount:	1,200.00
Year:	2009

NORTH COUNTY SAND & GRAVEL INC (Continued) **1016469094**

Click this hyperlink while viewing on your computer to access
21 additional US_MINES: record(s) in the EDR Site Report.

A4 **NORTH COUNTY SAND & GRAVEL INC** **US MINES** **1011130475**
NE **N/A**
1/8-1/4 **SAN BERNARDINO (County), CA**
0.163 mi.
859 ft. **Site 4 of 4 in cluster A**

Relative: US MINES:
Higher

Mine ID:	0402253
SIC code(s):	144200 000000 000000 000000 000000 000000
Entity name:	TWIN CREEKS SPREADING GROUND
Company:	NORTH COUNTY SAND & GRAVEL INC
Status:	4
Status date:	20000907
Operation Class:	non-Coal Mining
Number of shops:	0
Number of plants:	0
Latitude:	00 00 00
Longitude:	000 00 00

Actual:
1432 ft.

B5 **FAB-TECH 17** **ABANDONED MINES** **1022837824**
NE **26227 SHERMAN RD** **N/A**
1/8-1/4 **MENIFEE, CA 92585**
0.209 mi.
1105 ft. **Site 1 of 4 in cluster B**

Relative: ABANDONED MINES:
Higher

Mine ID:	0405517
Mine Type:	Surface
Mine Status Description:	Abandoned
Mine Status Date:	2012-07-02 00:00:00
Coal (C) or Metal (M) Mine:	M
Controller ID:	M07059
Controller Name:	Mike J LaPaglia
Operator ID:	L08940
Operator name:	North County Sand & Gravel Inc
Address of Record Street:	26227 Sherman Rd
Address of Record PO Box:	Not reported
Address of Record City:	Menifee
Address of Record State:	CA
Address of Record Zip Code:	92585
Assessment Address Street:	26227 Sherman Road
Assessment Address PO Box:	Not reported
Assessment Address City:	MENIFEE
Assessment Address State:	CA
Assessment Address Zip Code:	92585
Mine Health and Safety Address Street:	26227 Sherman Rd
Mine Health and Safety Address PO Box:	Not reported
Mine Health and Safety Address City:	Menifee
Mine Health and Safety Address State:	CA
Mine Health and Safety Address Zip Code:	92585
Latitude:	33.740555
Longitude:	117.181666

Actual:
1432 ft.

B6 **FAB-TECH 49** **ABANDONED MINES** **1022837846**
NE **26227 SHERMAN RD** **N/A**
1/8-1/4 **ROMOLAND, CA 92585**
0.209 mi.
1105 ft. **Site 2 of 4 in cluster B**

Relative: **Higher**
Actual: **1432 ft.**

ABANDONED MINES:

Mine ID:	0405549
Mine Type:	Surface
Mine Status Description:	Abandoned
Mine Status Date:	2009-09-10 00:00:00
Coal (C) or Metal (M) Mine:	M
Controller ID:	M07059
Controller Name:	Mike J LaPaglia
Operator ID:	L08940
Operator name:	North County Sand & Gravel Inc
Address of Record Street:	26227 Sherman Rd
Address of Record PO Box:	Not reported
Address of Record City:	Romoland
Address of Record State:	CA
Address of Record Zip Code:	92585
Assessment Address Street:	26227 Sherman Road
Assessment Address PO Box:	Not reported
Assessment Address City:	ROMOLAND
Assessment Address State:	CA
Assessment Address Zip Code:	92585
Mine Health and Safety Address Street:	26227 Sherman Rd
Mine Health and Safety Address PO Box:	Not reported
Mine Health and Safety Address City:	Romoland
Mine Health and Safety Address State:	CA
Mine Health and Safety Address Zip Code:	92585
Latitude:	Not reported
Longitude:	Not reported

B7 **FAB-TECH 18** **ABANDONED MINES** **1022896526**
NE **26227 SHERMAN RD** **N/A**
1/8-1/4 **MENIFEE, CA 92585**
0.209 mi.
1105 ft. **Site 3 of 4 in cluster B**

Relative: **Higher**
Actual: **1432 ft.**

ABANDONED MINES:

Mine ID:	0405518
Mine Type:	Surface
Mine Status Description:	Abandoned
Mine Status Date:	2017-01-04 00:00:00
Coal (C) or Metal (M) Mine:	M
Controller ID:	M07059
Controller Name:	Mike J LaPaglia
Operator ID:	L08940
Operator name:	North County Sand & Gravel Inc
Address of Record Street:	26227 Sherman Rd
Address of Record PO Box:	Not reported
Address of Record City:	Menifee
Address of Record State:	CA
Address of Record Zip Code:	92585
Assessment Address Street:	26227 Sherman Road
Assessment Address PO Box:	Not reported
Assessment Address City:	MENIFEE
Assessment Address State:	CA
Assessment Address Zip Code:	92585

FAB-TECH 18 (Continued) **1022896526**

Mine Health and Safety Address Street:	26227 Sherman Rd
Mine Health and Safety Address PO Box:	Not reported
Mine Health and Safety Address City:	Menifee
Mine Health and Safety Address State:	CA
Mine Health and Safety Address Zip Code:	92585
Latitude:	33.740556
Longitude:	117.181667

B8 **FAB-TECH 45** **ABANDONED MINES** **1022837905**
NE **26227 SHERMAN RD** **N/A**
1/8-1/4 **MENIFEE, CA 92585**
0.209 mi.
1105 ft. **Site 4 of 4 in cluster B**

Relative: **Higher**
Actual: **1432 ft.**

ABANDONED MINES:

Mine ID:	0405645
Mine Type:	Surface
Mine Status Description:	Abandoned
Mine Status Date:	2012-12-07 00:00:00
Coal (C) or Metal (M) Mine:	M
Controller ID:	M07059
Controller Name:	Mike J LaPaglia
Operator ID:	L08940
Operator name:	North County Sand & Gravel Inc
Address of Record Street:	26227 Sherman Rd
Address of Record PO Box:	Not reported
Address of Record City:	Menifee
Address of Record State:	CA
Address of Record Zip Code:	92585
Assessment Address Street:	26227 Sherman Road
Assessment Address PO Box:	Not reported
Assessment Address City:	MENIFEE
Assessment Address State:	CA
Assessment Address Zip Code:	92585
Mine Health and Safety Address Street:	26227 Sherman Rd
Mine Health and Safety Address PO Box:	Not reported
Mine Health and Safety Address City:	Menifee
Mine Health and Safety Address State:	CA
Mine Health and Safety Address Zip Code:	92585
Latitude:	Not reported
Longitude:	Not reported

C9 **CHANEY'S AUTO** **LUST** **S101300608**
NNE **27411 ETHANAC ROAD** **HIST CORTESE** **N/A**
1/4-1/2 **ROMOLAND, CA 92580**
0.271 mi.
1429 ft. **Site 1 of 2 in cluster C**

Relative: **Higher**
Actual: **1432 ft.**

LUST REG 8:

Region:	8
County:	Riverside
Regional Board:	Santa Ana Region
Facility Status:	Preliminary site assessment underway
Case Number:	083302297T
Local Case Num:	93620
Case Type:	Aquifer affected

CHANEY'S AUTO (Continued) **S101300608**

Substance:	Waste Oil
Qty Leaked:	Not reported
Abate Method:	Not reported
Cross Street:	Not reported
Enf Type:	Not reported
Funding:	Not reported
How Discovered:	Tank Closure
How Stopped:	Not reported
Leak Cause:	UNK
Leak Source:	UNK
Global ID:	T0606500332
How Stopped Date:	9/30/1992
Enter Date:	9/3/1993
Date Confirmation of Leak Began:	9/30/1992
Date Preliminary Assessment Began:	7/9/1993
Discover Date:	9/30/1992
Enforcement Date:	Not reported
Close Date:	Not reported
Date Prelim Assessment Workplan Submitted:	Not reported
Date Pollution Characterization Began:	Not reported
Date Remediation Plan Submitted:	Not reported
Date Remedial Action Underway:	Not reported
Date Post Remedial Action Monitoring:	Not reported
Enter Date:	9/3/1993
GW Qualifies:	Not reported
Soil Qualifies:	Not reported
Operator:	Not reported
Facility Contact:	Not reported
Interim:	Not reported
Oversite Program:	LUST
Latitude:	33.7428122
Longitude:	-117.1834162
MTBE Date:	Not reported
Max MTBE GW:	Not reported
MTBE Concentration:	0
Max MTBE Soil:	Not reported
MTBE Fuel:	0
MTBE Tested:	Not Required to be Tested.
MTBE Class:	*
Staff:	VJJ
Staff Initials:	UNK
Lead Agency:	Local Agency
Local Agency:	33000L
Hydr Basin #:	SAN JACINTO (8-5)
Beneficial:	Not reported
Priority:	Not reported
Cleanup Fund Id:	Not reported
Work Suspended:	Not reported

Summary: Not reported

HIST CORTESE:

Region:	CORTESE
Facility County Code:	33
Reg By:	LTNKA
Reg Id:	083302297T

C10
NNE
1/4-1/2
0.271 mi.
1429 ft.

CHANEY'S AUTOMOTIVE
27411 ETHANAC ROAD
ROMOLAND, CA 92580

Site 2 of 2 in cluster C

LUST **S103820949**
N/A

Relative:
Higher

Actual:
1432 ft.

LUST:

Lead Agency:	RIVERSIDE COUNTY LOP
Case Type:	LUST Cleanup Site
Geo Track:	http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0606500332
Global Id:	T0606500332
Latitude:	33.7424785024374
Longitude:	-117.182165506781
Status:	Completed - Case Closed
Status Date:	09/29/2000
Case Worker:	RIV
RB Case Number:	083302297T
Local Agency:	RIVERSIDE COUNTY LOP
File Location:	Local Agency Warehouse
Local Case Number:	93620
Potential Media Affect:	Aquifer used for drinking water supply
Potential Contaminants of Concern:	Waste Oil / Motor / Hydraulic / Lubricating
Site History:	Not reported

LUST:

Global Id:	T0606500332
Contact Type:	Local Agency Caseworker
Contact Name:	Riverside County LOP
Organization Name:	RIVERSIDE COUNTY LOP
Address:	3880 LEMON ST SUITE 200
City:	RIVERSIDE
Email:	Not reported
Phone Number:	9519558980

Global Id:	T0606500332
Contact Type:	Regional Board Caseworker
Contact Name:	VALERIE JAHN-BULL
Organization Name:	SANTA ANA RWQCB (REGION 8)
Address:	3737 MAIN STREET, SUITE 500
City:	RIVERSIDE
Email:	valerie.jahn-bull@waterboards.ca.gov
Phone Number:	9517824903

LUST:

Global Id:	T0606500332
Action Type:	ENFORCEMENT
Date:	09/29/2000
Action:	Closure/No Further Action Letter - #Riv Co Closure

Global Id:	T0606500332
Action Type:	ENFORCEMENT
Date:	09/28/2000
Action:	File review - #RCDEH Upload Site File 4/21/2010

Global Id:	T0606500332
Action Type:	Other
Date:	10/02/1992
Action:	Leak Reported

CHANEY'S AUTOMOTIVE (Continued) **S103820949**

Global Id: T0606500332
Action Type: Other
Date: 09/30/1992
Action: Leak Stopped

Global Id: T0606500332
Action Type: Other
Date: 09/30/1992
Action: Leak Discovery

LUST:
Global Id: T0606500332
Status: Open - Case Begin Date
Status Date: 09/30/1992

Global Id: T0606500332
Status: Open - Site Assessment
Status Date: 09/30/1992

Global Id: T0606500332
Status: Open - Site Assessment
Status Date: 07/09/1993

Global Id: T0606500332
Status: Completed - Case Closed
Status Date: 09/29/2000

RIVERSIDE CO. LUST:
Region: RIVERSIDE
Facility ID: 93620
Employee: Malloy
Site Closed: Yes
Case Type: Soil only
Facility Status: closed/action completed
Casetype Decode: Soil only is impacted
Fstatus Decode: Closed/Action completed

11
NE
1/4-1/2
0.315 mi.
1663 ft.

NEILL #39;S RECYCLING **SWRCY** **S111023774**
26026 SHERMAN RD **NPDES** **N/A**
MENIFEE, CA 92585

Relative:
Higher

Actual:
1434 ft.

SWRCY:
Reg Id: 137839
Cert Id: RC137839.001
Mailing Address: 26026 Sherman Rd
Mailing City: Menifee
Mailing State: CA
Mailing Zip Code: 92585
Website: Not reported
Email: superbrentpower@gmail.com
Phone Number: (951) 514-8656
Grand Father: N
Rural: N
Operation Begin Date: 03/15/2011

NEILL #39;S RECYCLING (Continued) **S111023774**

Aluminium:	Y
Glass:	Y
Plastic:	Y
Bimetal:	Y
Agency:	N/A
Monday Hours Of Operation:	8:00 am - 5:00 pm
Tuesday Hours Of Operation:	8:00 am - 5:00 pm
Wednesday Hours Of Operation:	8:00 am - 5:00 pm
Thursday Hours Of Operation:	8:00 am - 5:00 pm
Friday Hours Of Operation:	8:00 am - 5:00 pm
Saturday Hours Of Operation:	8:00 am - 5:00 pm
Sunday Hours Of Operation:	; Closed 11:00 am - 12:00 pmCLOSED
Organization ID:	136049
Organization Name:	Neill #39;s Recycling

NPDES:

Npdes Number:	Not reported
Facility Status:	Not reported
Agency Id:	Not reported
Region:	8
Regulatory Measure Id:	434700
Order No:	Not reported
Regulatory Measure Type:	Industrial
Place Id:	Not reported
WDID:	8 33NEC000396
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
RECEIVED DATE:	08/18/2015
PROCESSED DATE:	02/05/2013
STATUS CODE NAME:	Active
STATUS DATE:	08/18/2015
PLACE SIZE:	39204
PLACE SIZE UNIT:	SqFt
FACILITY CONTACT NAME:	Brent Neill
FACILITY CONTACT TITLE:	owner
FACILITY CONTACT PHONE:	951-514-8656
FACILITY CONTACT PHONE EXT:	Not reported
FACILITY CONTACT EMAIL:	superbrentpower@gmail.com
OPERATOR NAME:	Brent Neil
OPERATOR ADDRESS:	26026 Sherman Rd
OPERATOR CITY:	Menifee
OPERATOR STATE:	California
OPERATOR ZIP:	92585
OPERATOR CONTACT NAME:	Brent Neill
OPERATOR CONTACT TITLE:	owner
OPERATOR CONTACT PHONE:	951-514-8656
OPERATOR CONTACT PHONE EXT:	Not reported
OPERATOR CONTACT EMAIL:	superbrentpower@gmail.com
OPERATOR TYPE:	Private Business

NEILL #39;S RECYCLING (Continued) **S111023774**

DEVELOPER NAME:	Not reported
DEVELOPER ADDRESS:	Not reported
DEVELOPER CITY:	Not reported
DEVELOPER STATE:	California
DEVELOPER ZIP:	Not reported
DEVELOPER CONTACT NAME:	Not reported
DEVELOPER CONTACT TITLE:	Not reported
CONSTYPE LINEAR UTILITY IND:	Not reported
EMERGENCY PHONE NO:	Not reported
EMERGENCY PHONE EXT:	Not reported
CONSTYPE ABOVE GROUND IND:	Not reported
CONSTYPE BELOW GROUND IND:	Not reported
CONSTYPE CABLE LINE IND:	Not reported
CONSTYPE COMM LINE IND:	Not reported
CONSTYPE COMMERTIAL IND:	Not reported
CONSTYPE ELECTRICAL LINE IND:	Not reported
CONSTYPE GAS LINE IND:	Not reported
CONSTYPE INDUSTRIAL IND:	Not reported
CONSTYPE OTHER DESRIPTION:	Not reported
CONSTYPE OTHER IND:	Not reported
CONSTYPE RECONS IND:	Not reported
CONSTYPE RESIDENTIAL IND:	Not reported
CONSTYPE TRANSPORT IND:	Not reported
CONSTYPE UTILITY DESCRIPTION:	Not reported
CONSTYPE UTILITY IND:	Not reported
CONSTYPE WATER SEWER IND:	Not reported
DIR DISCHARGE USWATER IND:	N
RECEIVING WATER NAME:	eastern municipal water district
CERTIFIER NAME:	Brent Neill
CERTIFIER TITLE:	owner
CERTIFICATION DATE:	28-SEP-16
PRIMARY SIC:	5093-Scrap and Waste Materials
SECONDARY SIC:	Not reported
TERTIARY SIC:	Not reported
Npdes Number:	CAS000001
Facility Status:	Active
Agency Id:	0
Region:	8
Regulatory Measure Id:	434700
Order No:	97-03-DWQ
Regulatory Measure Type:	Enrollee
Place Id:	Not reported
WDID:	8 33NEC000396
Program Type:	Industrial
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	02/05/2013
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Brent Neil
Discharge Address:	26026 Sherman Rd
Discharge City:	Menifee
Discharge State:	California
Discharge Zip:	92585
RECEIVED DATE:	Not reported
PROCESSED DATE:	Not reported
STATUS CODE NAME:	Not reported

NEILL #39;S RECYCLING (Continued) **S111023774**

STATUS DATE:	Not reported
PLACE SIZE:	Not reported
PLACE SIZE UNIT:	Not reported
FACILITY CONTACT NAME:	Not reported
FACILITY CONTACT TITLE:	Not reported
FACILITY CONTACT PHONE:	Not reported
FACILITY CONTACT PHONE EXT:	Not reported
FACILITY CONTACT EMAIL:	Not reported
OPERATOR NAME:	Not reported
OPERATOR ADDRESS:	Not reported
OPERATOR CITY:	Not reported
OPERATOR STATE:	Not reported
OPERATOR ZIP:	Not reported
OPERATOR CONTACT NAME:	Not reported
OPERATOR CONTACT TITLE:	Not reported
OPERATOR CONTACT PHONE:	Not reported
OPERATOR CONTACT PHONE EXT:	Not reported
OPERATOR CONTACT EMAIL:	Not reported
OPERATOR TYPE:	Not reported
DEVELOPER NAME:	Not reported
DEVELOPER ADDRESS:	Not reported
DEVELOPER CITY:	Not reported
DEVELOPER STATE:	Not reported
DEVELOPER ZIP:	Not reported
DEVELOPER CONTACT NAME:	Not reported
DEVELOPER CONTACT TITLE:	Not reported
CONSTYPE LINEAR UTILITY IND:	Not reported
EMERGENCY PHONE NO:	Not reported
EMERGENCY PHONE EXT:	Not reported
CONSTYPE ABOVE GROUND IND:	Not reported
CONSTYPE BELOW GROUND IND:	Not reported
CONSTYPE CABLE LINE IND:	Not reported
CONSTYPE COMM LINE IND:	Not reported
CONSTYPE COMMERTIAL IND:	Not reported
CONSTYPE ELECTRICAL LINE IND:	Not reported
CONSTYPE GAS LINE IND:	Not reported
CONSTYPE INDUSTRIAL IND:	Not reported
CONSTYPE OTHER DESRIPTION:	Not reported
CONSTYPE OTHER IND:	Not reported
CONSTYPE RECONS IND:	Not reported
CONSTYPE RESIDENTIAL IND:	Not reported
CONSTYPE TRANSPORT IND:	Not reported
CONSTYPE UTILITY DESCRIPTION:	Not reported
CONSTYPE UTILITY IND:	Not reported
CONSTYPE WATER SEWER IND:	Not reported
DIR DISCHARGE USWATER IND:	Not reported
RECEIVING WATER NAME:	Not reported
CERTIFIER NAME:	Not reported
CERTIFIER TITLE:	Not reported
CERTIFICATION DATE:	Not reported
PRIMARY SIC:	Not reported
SECONDARY SIC:	Not reported
TERTIARY SIC:	Not reported

12
WSW
1/2-1
0.870 mi.
4596 ft.

THE CLUB K-8 SCHOOL
EVANS ROAD/NOVA LANE
ROMOLAND, CA 92586

ENVIROSTOR SCH

S105628774
N/A

Relative:
Lower

Actual:
1425 ft.

ENVIROSTOR:

Facility ID:	33010067
Status:	No Further Action
Status Date:	04/17/2003
Site Code:	404389
Site Type:	School Investigation
Site Type Detailed:	School
Acres:	19.08
NPL:	NO
Regulatory Agencies:	SMBRP
Lead Agency:	SMBRP
Program Manager:	Not reported
Supervisor:	Javier Hinojosa
Division Branch:	Southern California Schools & Brownfields Outreach
Assembly:	67
Senate:	23
Special Program:	Not reported
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	School District
Latitude:	33.73257
Longitude:	-117.1943
APN:	331-080-008, 331-080-009, 331-080-010, 331-080-011
Past Use:	AGRICULTURAL - ROW CROPS
Potential COC:	DDE Lead Chromium VI Cobalt Copper and compounds Nickel (soluble salts
Confirmed COC:	Chromium VI Cobalt Copper and compounds Nickel (soluble salts DDE Lead
Potential Description:	SOIL
Alias Name:	CLUB K-8 SCHOOL
Alias Type:	Alternate Name
Alias Name:	ROMOLAND ELEMENTARY SCHOOL DISTRICT
Alias Type:	Alternate Name
Alias Name:	ROMOLAND SD-THE CLUB K-8 SCHOOL
Alias Type:	Alternate Name
Alias Name:	THE CLUB K-8 SCHOOL
Alias Type:	Alternate Name
Alias Name:	331-080-008
Alias Type:	APN
Alias Name:	331-080-009
Alias Type:	APN
Alias Name:	331-080-010
Alias Type:	APN
Alias Name:	331-080-011
Alias Type:	APN
Alias Name:	404389
Alias Type:	Project Code (Site Code)
Alias Name:	33010067
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Preliminary Endangerment Assessment Report

THE CLUB K-8 SCHOOL (Continued) **S105628774**

Completed Date:	04/17/2003
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Phase 1
Completed Date:	09/27/2002
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Technical Report
Completed Date:	12/24/2002
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Environmental Oversight Agreement
Completed Date:	10/28/2002
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Cost Recovery Closeout Memo
Completed Date:	04/18/2003
Comments:	Not reported
Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

SCH:

Facility ID:	33010067
Site Type:	School Investigation
Site Type Detail:	School
Site Mgmt. Req.:	NONE SPECIFIED
Acres:	19.08
National Priorities List:	NO
Cleanup Oversight Agencies:	SMBRP
Lead Agency:	SMBRP
Lead Agency Description:	DTSC - Site Cleanup Program
Project Manager:	Not reported
Supervisor:	Javier Hinojosa
Division Branch:	Southern California Schools & Brownfields Outreach
Site Code:	404389
Assembly:	67
Senate:	23
Special Program Status:	Not reported
Status:	No Further Action
Status Date:	04/17/2003

THE CLUB K-8 SCHOOL (Continued) **S105628774**

Restricted Use:	NO
Funding:	School District
Latitude:	33.73257
Longitude:	-117.1943
APN:	331-080-008, 331-080-009, 331-080-010, 331-080-011
Past Use:	AGRICULTURAL - ROW CROPS
Potential COC:	DDE, Lead, Chromium VI, Cobalt, Copper and compounds, Nickel (soluble salts
Confirmed COC:	Chromium VI, Cobalt, Copper and compounds, Nickel (soluble salts, DDE, Lead
Potential Description:	SOIL
Alias Name:	CLUB K-8 SCHOOL
Alias Type:	Alternate Name
Alias Name:	ROMOLAND ELEMENTARY SCHOOL DISTRICT
Alias Type:	Alternate Name
Alias Name:	ROMOLAND SD-THE CLUB K-8 SCHOOL
Alias Type:	Alternate Name
Alias Name:	THE CLUB K-8 SCHOOL
Alias Type:	Alternate Name
Alias Name:	331-080-008
Alias Type:	APN
Alias Name:	331-080-009
Alias Type:	APN
Alias Name:	331-080-010
Alias Type:	APN
Alias Name:	331-080-011
Alias Type:	APN
Alias Name:	404389
Alias Type:	Project Code (Site Code)
Alias Name:	33010067
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Preliminary Endangerment Assessment Report
Completed Date:	04/17/2003
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Phase 1
Completed Date:	09/27/2002
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Technical Report
Completed Date:	12/24/2002
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Environmental Oversight Agreement
Completed Date:	10/28/2002
Comments:	Not reported
Completed Area Name:	PROJECT WIDE

THE CLUB K-8 SCHOOL (Continued) **S105628774**

Completed Sub Area Name:	Not reported
Completed Document Type:	Cost Recovery Closeout Memo
Completed Date:	04/18/2003
Comments:	Not reported
Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

Count: 0 records.

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
		NO SITES FOUND			

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 12/11/2017
Date Data Arrived at EDR: 12/22/2017
Date Made Active in Reports: 01/05/2018
Number of Days to Update: 14

Source: EPA
Telephone: N/A
Last EDR Contact: 04/06/2018
Next Scheduled EDR Contact: 07/16/2018
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 3
Telephone 215-814-5418

EPA Region 4
Telephone 404-562-8033

EPA Region 5
Telephone 312-886-6686

EPA Region 6
Telephone: 214-655-6659

EPA Region 7
Telephone: 913-551-7247

EPA Region 8
Telephone: 303-312-6774

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 12/11/2017
Date Data Arrived at EDR: 12/22/2017
Date Made Active in Reports: 01/05/2018
Number of Days to Update: 14

Source: EPA
Telephone: N/A
Last EDR Contact: 04/06/2018
Next Scheduled EDR Contact: 07/16/2018
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Federal Delisted NPL site list

Delisted NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 12/11/2017
Date Data Arrived at EDR: 12/22/2017
Date Made Active in Reports: 01/05/2018
Number of Days to Update: 14

Source: EPA
Telephone: N/A
Last EDR Contact: 04/06/2018
Next Scheduled EDR Contact: 07/16/2018
Data Release Frequency: Quarterly

Federal CERCLIS list

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 11/07/2016
Date Data Arrived at EDR: 01/05/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 92

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 04/06/2018
Next Scheduled EDR Contact: 07/16/2018
Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 01/09/2018
Date Data Arrived at EDR: 02/06/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 66

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 04/20/2018
Next Scheduled EDR Contact: 07/30/2018
Data Release Frequency: Quarterly

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that. based upon available information, the location is not judged to be potential NPL site.

Date of Government Version: 01/09/2018
Date Data Arrived at EDR: 02/06/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 66

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 04/20/2018
Next Scheduled EDR Contact: 07/30/2018
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 12/11/2017
Date Data Arrived at EDR: 12/26/2017
Date Made Active in Reports: 02/09/2018
Number of Days to Update: 45

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 03/28/2018
Next Scheduled EDR Contact: 07/09/2018
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 12/11/2017
Date Data Arrived at EDR: 12/26/2017
Date Made Active in Reports: 02/09/2018
Number of Days to Update: 45

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/28/2018
Next Scheduled EDR Contact: 07/09/2018
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 12/11/2017
Date Data Arrived at EDR: 12/26/2017
Date Made Active in Reports: 02/09/2018
Number of Days to Update: 45

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/28/2018
Next Scheduled EDR Contact: 07/09/2018
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 12/11/2017
Date Data Arrived at EDR: 12/26/2017
Date Made Active in Reports: 02/09/2018
Number of Days to Update: 45

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/28/2018
Next Scheduled EDR Contact: 07/09/2018
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 12/11/2017
Date Data Arrived at EDR: 12/26/2017
Date Made Active in Reports: 02/09/2018
Number of Days to Update: 45

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/28/2018
Next Scheduled EDR Contact: 07/09/2018
Data Release Frequency: Quarterly

Federal institutional controls / engineering controls registries

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 05/22/2017
Date Data Arrived at EDR: 06/13/2017
Date Made Active in Reports: 09/15/2017
Number of Days to Update: 94

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 02/09/2018
Next Scheduled EDR Contact: 05/28/2018
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 11/13/2017
Date Data Arrived at EDR: 11/27/2017
Date Made Active in Reports: 02/09/2018
Number of Days to Update: 74

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 02/27/2018
Next Scheduled EDR Contact: 06/11/2018
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 11/13/2017
Date Data Arrived at EDR: 11/27/2017
Date Made Active in Reports: 02/09/2018
Number of Days to Update: 74

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 02/27/2018
Next Scheduled EDR Contact: 06/11/2018
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 01/16/2018
Date Data Arrived at EDR: 01/19/2018
Date Made Active in Reports: 03/23/2018
Number of Days to Update: 63

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 03/27/2018
Next Scheduled EDR Contact: 07/09/2018
Data Release Frequency: Quarterly

State- and tribal - equivalent NPL

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 01/30/2018
Date Data Arrived at EDR: 01/31/2018
Date Made Active in Reports: 03/19/2018
Number of Days to Update: 47

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/31/2018
Next Scheduled EDR Contact: 05/14/2018
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 01/30/2018
Date Data Arrived at EDR: 01/31/2018
Date Made Active in Reports: 03/19/2018
Number of Days to Update: 47

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/31/2018
Next Scheduled EDR Contact: 05/14/2018
Data Release Frequency: Quarterly

State and tribal landfill and/or solid waste disposal site lists

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 02/12/2018
Date Data Arrived at EDR: 02/14/2018
Date Made Active in Reports: 04/03/2018
Number of Days to Update: 48

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 02/14/2018
Next Scheduled EDR Contact: 05/28/2018
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

LUST REG 6V: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 9: Leaking Underground Storage Tank Report
Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 09/26/2011
Next Scheduled EDR Contact: 01/09/2012
Data Release Frequency: No Update Planned

LUST: Leaking Underground Fuel Tank Report (GEOTRACKER)
Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 03/12/2018
Date Data Arrived at EDR: 03/14/2018
Date Made Active in Reports: 03/21/2018
Number of Days to Update: 7

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 03/14/2018
Next Scheduled EDR Contact: 06/25/2018
Data Release Frequency: Quarterly

LUST REG 7: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 8: Leaking Underground Storage Tanks
California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: Varies

LUST REG 6L: Leaking Underground Storage Tank Case Listing
For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database
Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

LUST REG 4: Underground Storage Tank Leak List

Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: No Update Planned

LUST REG 3: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List

Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: Quarterly

LUST REG 1: Active Toxic Site Investigation

Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 10/12/2017
Date Data Arrived at EDR: 01/23/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 80

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 01/23/2018
Next Scheduled EDR Contact: 05/07/2018
Data Release Frequency: Varies

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 10/12/2017
Date Data Arrived at EDR: 01/23/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 80

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 01/23/2018
Next Scheduled EDR Contact: 05/07/2018
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 10/14/2017
Date Data Arrived at EDR: 01/23/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 80
Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 01/19/2018
Next Scheduled EDR Contact: 05/07/2018
Data Release Frequency: Varies

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land
Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 10/16/2017
Date Data Arrived at EDR: 01/23/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 80
Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 01/23/2018
Next Scheduled EDR Contact: 05/07/2018
Data Release Frequency: Varies

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 10/14/2017
Date Data Arrived at EDR: 01/23/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 80
Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 01/23/2018
Next Scheduled EDR Contact: 05/07/2018
Data Release Frequency: Varies

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 09/30/2017
Date Data Arrived at EDR: 01/23/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 80
Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 01/23/2018
Next Scheduled EDR Contact: 05/07/2018
Data Release Frequency: Varies

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 10/24/2017
Date Data Arrived at EDR: 01/23/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 80
Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 01/23/2018
Next Scheduled EDR Contact: 05/07/2018
Data Release Frequency: Varies

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 01/06/2018
Date Data Arrived at EDR: 01/23/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 80
Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 01/23/2018
Next Scheduled EDR Contact: 05/07/2018
Data Release Frequency: Varies

SLIC: Statewide SLIC Cases (GEOTRACKER)
Cleanup Program Sites (CPS; also known as Site Cleanups [SC] and formerly known as Spills, Leaks, Investigations, and Cleanups [SLIC] sites) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 03/12/2018
Date Data Arrived at EDR: 03/14/2018
Date Made Active in Reports: 03/21/2018
Number of Days to Update: 7
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 06/25/2018
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: Quarterly

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: Semi-Annually

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: Varies

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: Semi-Annually

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: Semi-Annually

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35
Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36
Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11
Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: Semi-Annually

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17
Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 08/08/2011
Next Scheduled EDR Contact: 11/21/2011
Data Release Frequency: Annually

State and tribal registered storage tank lists

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 05/15/2017
Date Data Arrived at EDR: 05/30/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 136
Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 04/13/2018
Next Scheduled EDR Contact: 07/23/2018
Data Release Frequency: Varies

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 03/12/2018
Date Data Arrived at EDR: 03/14/2018
Date Made Active in Reports: 03/29/2018
Number of Days to Update: 15
Source: SWRCB
Telephone: 916-341-5851
Last EDR Contact: 03/14/2018
Next Scheduled EDR Contact: 06/25/2018
Data Release Frequency: Semi-Annually

AST: Aboveground Petroleum Storage Tank Facilities
A listing of aboveground storage tank petroleum storage tank locations.

Date of Government Version: 07/06/2016
Date Data Arrived at EDR: 07/12/2016
Date Made Active in Reports: 09/19/2016
Number of Days to Update: 69
Source: California Environmental Protection Agency
Telephone: 916-327-5092
Last EDR Contact: 03/21/2018
Next Scheduled EDR Contact: 07/09/2018
Data Release Frequency: Quarterly

INDIAN UST R4: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 10/14/2017
Date Data Arrived at EDR: 01/23/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 80
Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 01/19/2018
Next Scheduled EDR Contact: 05/07/2018
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 04/24/2017
Date Data Arrived at EDR: 07/27/2017
Date Made Active in Reports: 12/08/2017
Number of Days to Update: 134
Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 01/23/2018
Next Scheduled EDR Contact: 05/07/2018
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 10/12/2017
Date Data Arrived at EDR: 01/23/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 80
Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 01/23/2018
Next Scheduled EDR Contact: 05/07/2018
Data Release Frequency: Varies

INDIAN UST R10: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 10/24/2017
Date Data Arrived at EDR: 01/23/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 80
Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 01/23/2018
Next Scheduled EDR Contact: 05/07/2018
Data Release Frequency: Varies

INDIAN UST R1: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 10/14/2017
Date Data Arrived at EDR: 01/23/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 80
Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 01/23/2018
Next Scheduled EDR Contact: 05/07/2018
Data Release Frequency: Varies

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 10/16/2017
Date Data Arrived at EDR: 01/23/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 80

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 01/23/2018
Next Scheduled EDR Contact: 05/07/2018
Data Release Frequency: Varies

INDIAN UST R7: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 01/13/2018
Date Data Arrived at EDR: 01/23/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 80

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 01/23/2018
Next Scheduled EDR Contact: 05/07/2018
Data Release Frequency: Varies

INDIAN UST R9: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 09/30/2017
Date Data Arrived at EDR: 01/23/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 80

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 01/23/2018
Next Scheduled EDR Contact: 05/07/2018
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

VCP: Voluntary Cleanup Program Properties

Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 01/30/2018
Date Data Arrived at EDR: 01/31/2018
Date Made Active in Reports: 03/19/2018
Number of Days to Update: 47

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/31/2018
Next Scheduled EDR Contact: 05/14/2018
Data Release Frequency: Quarterly

INDIAN VCP R1: Voluntary Cleanup Priority Listing

A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 09/29/2015
Date Made Active in Reports: 02/18/2016
Number of Days to Update: 142

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 03/21/2018
Next Scheduled EDR Contact: 07/09/2018
Data Release Frequency: Varies

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng

A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

State and tribal Brownfields sites

BROWNFIELDS: Considered Brownfieds Sites Listing
A listing of sites the SWRCB considers to be Brownfields since these are sites have come to them through the MOA Process.

Date of Government Version: 12/22/2017
Date Data Arrived at EDR: 12/26/2017
Date Made Active in Reports: 01/31/2018
Number of Days to Update: 36
Source: State Water Resources Control Board
Telephone: 916-323-7905
Last EDR Contact: 03/27/2018
Next Scheduled EDR Contact: 07/09/2018
Data Release Frequency: Quarterly

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 01/19/2018
Date Data Arrived at EDR: 01/19/2018
Date Made Active in Reports: 02/09/2018
Number of Days to Update: 21
Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 03/21/2018
Next Scheduled EDR Contact: 07/02/2018
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT: Waste Management Unit Database
Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30
Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 01/31/2018
Next Scheduled EDR Contact: 05/21/2018
Data Release Frequency: No Update Planned

SWRCY: Recycler Database
A listing of recycling facilities in California.

Date of Government Version: 12/11/2017
Date Data Arrived at EDR: 12/12/2017
Date Made Active in Reports: 01/17/2018
Number of Days to Update: 36
Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 03/14/2018
Next Scheduled EDR Contact: 06/25/2018
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing
A listing of registered waste tire haulers.

Date of Government Version: 02/08/2018
Date Data Arrived at EDR: 02/09/2018
Date Made Active in Reports: 03/20/2018
Number of Days to Update: 39

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 02/09/2018
Next Scheduled EDR Contact: 02/26/2018
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands

Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 01/30/2018
Next Scheduled EDR Contact: 05/14/2018
Data Release Frequency: Varies

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations

A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 04/18/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: No Update Planned

ODI: Open Dump Inventory

An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

IHS OPEN DUMPS: Open Dumps on Indian Land

A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 04/01/2014
Date Data Arrived at EDR: 08/06/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 176

Source: Department of Health & Human Serivces, Indian Health Service
Telephone: 301-443-1452
Last EDR Contact: 02/02/2018
Next Scheduled EDR Contact: 05/14/2018
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 01/19/2018
Date Data Arrived at EDR: 01/24/2018
Date Made Active in Reports: 02/09/2018
Number of Days to Update: 16

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 02/27/2018
Next Scheduled EDR Contact: 06/11/2018
Data Release Frequency: No Update Planned

HIST CAL-SITES: Calsites Database

The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 01/30/2018
Date Data Arrived at EDR: 01/31/2018
Date Made Active in Reports: 03/19/2018
Number of Days to Update: 47

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/31/2018
Next Scheduled EDR Contact: 05/14/2018
Data Release Frequency: Quarterly

CDL: Clandestine Drug Labs

A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 06/30/2017
Date Data Arrived at EDR: 08/18/2017
Date Made Active in Reports: 09/21/2017
Number of Days to Update: 34

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 04/18/2018
Next Scheduled EDR Contact: 07/23/2018
Data Release Frequency: Varies

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 01/09/2018
Date Data Arrived at EDR: 01/24/2018
Date Made Active in Reports: 02/09/2018
Number of Days to Update: 16

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 02/27/2018
Next Scheduled EDR Contact: 06/11/2018
Data Release Frequency: Quarterly

Local Lists of Registered Storage Tanks

SWEEPS UST: SWEEPS UST Listing

Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

UST MENDOCINO: Mendocino County UST Database
A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 02/28/2018
Date Data Arrived at EDR: 03/01/2018
Date Made Active in Reports: 03/28/2018
Number of Days to Update: 27

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 02/22/2018
Next Scheduled EDR Contact: 06/11/2018
Data Release Frequency: Annually

HIST UST: Hazardous Substance Storage Container Database
The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CA FID UST: Facility Inventory Database
The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Local Land Records

LIENS: Environmental Liens Listing
A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 01/28/2018
Date Data Arrived at EDR: 03/01/2018
Date Made Active in Reports: 04/16/2018
Number of Days to Update: 46

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 02/28/2018
Next Scheduled EDR Contact: 06/18/2018
Data Release Frequency: Varies

LIENS 2: CERCLA Lien Information
A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 12/11/2017
Date Data Arrived at EDR: 12/22/2017
Date Made Active in Reports: 01/12/2018
Number of Days to Update: 21

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 02/06/2018
Next Scheduled EDR Contact: 05/21/2018
Data Release Frequency: Semi-Annually

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 02/08/2018
Date Data Arrived at EDR: 02/08/2018
Date Made Active in Reports: 02/08/2018
Number of Days to Update: 0

Source: DTSC and SWRCB
Telephone: 916-323-3400
Last EDR Contact: 03/06/2018
Next Scheduled EDR Contact: 06/18/2018
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 01/19/2018
Date Data Arrived at EDR: 01/19/2018
Date Made Active in Reports: 03/23/2018
Number of Days to Update: 63

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 03/27/2018
Next Scheduled EDR Contact: 07/09/2018
Data Release Frequency: Quarterly

CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 02/15/2018
Date Data Arrived at EDR: 02/20/2018
Date Made Active in Reports: 04/03/2018
Number of Days to Update: 42

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 02/20/2018
Next Scheduled EDR Contact: 05/07/2018
Data Release Frequency: Semi-Annually

LDS: Land Disposal Sites Listing (GEOTRACKER)

Land Disposal sites (Landfills) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 03/12/2018
Date Data Arrived at EDR: 03/14/2018
Date Made Active in Reports: 03/21/2018
Number of Days to Update: 7

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 06/25/2018
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing (GEOTRACKER)

Military sites (consisting of: Military UST sites; Military Privatized sites; and Military Cleanup sites [formerly known as DoD non UST]) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 03/12/2018
Date Data Arrived at EDR: 03/14/2018
Date Made Active in Reports: 03/21/2018
Number of Days to Update: 7

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 06/25/2018
Data Release Frequency: Quarterly

SPILLS 90: SPILLS90 data from FirstSearch

Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 06/06/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/22/2013
Number of Days to Update: 50

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 12/11/2017
Date Data Arrived at EDR: 12/26/2017
Date Made Active in Reports: 02/09/2018
Number of Days to Update: 45

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/28/2018
Next Scheduled EDR Contact: 07/09/2018
Data Release Frequency: Quarterly

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 01/31/2015
Date Data Arrived at EDR: 07/08/2015
Date Made Active in Reports: 10/13/2015
Number of Days to Update: 97

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 02/21/2018
Next Scheduled EDR Contact: 06/04/2018
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 04/13/2018
Next Scheduled EDR Contact: 07/23/2018
Data Release Frequency: Semi-Annually

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 04/11/2018
Next Scheduled EDR Contact: 07/23/2018
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 01/01/2017
Date Data Arrived at EDR: 02/03/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 63
Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 02/16/2018
Next Scheduled EDR Contact: 05/28/2018
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 01/11/2018
Date Data Arrived at EDR: 01/19/2018
Date Made Active in Reports: 03/02/2018
Number of Days to Update: 42
Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 03/27/2018
Next Scheduled EDR Contact: 07/09/2018
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88
Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 01/31/2018
Next Scheduled EDR Contact: 05/21/2018
Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 04/22/2013
Date Data Arrived at EDR: 03/03/2015
Date Made Active in Reports: 03/09/2015
Number of Days to Update: 6
Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 02/08/2018
Next Scheduled EDR Contact: 05/21/2018
Data Release Frequency: Varies

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 06/21/2017
Date Made Active in Reports: 01/05/2018
Number of Days to Update: 198
Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 03/23/2018
Next Scheduled EDR Contact: 07/02/2018
Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 01/10/2018
Date Made Active in Reports: 01/12/2018
Number of Days to Update: 2

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 02/23/2018
Next Scheduled EDR Contact: 06/04/2018
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/10/2010
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 77

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 04/09/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Annually

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 12/11/2017
Date Data Arrived at EDR: 12/22/2017
Date Made Active in Reports: 01/12/2018
Number of Days to Update: 21

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 03/09/2018
Next Scheduled EDR Contact: 06/18/2018
Data Release Frequency: Annually

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 11/02/2017
Date Data Arrived at EDR: 11/17/2017
Date Made Active in Reports: 12/08/2017
Number of Days to Update: 21

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 04/20/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

PRP: Potentially Responsible Parties
A listing of verified Potentially Responsible Parties

Date of Government Version: 10/25/2013
Date Data Arrived at EDR: 10/17/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 3
Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 02/06/2018
Next Scheduled EDR Contact: 05/21/2018
Data Release Frequency: Quarterly

PADS: PCB Activity Database System
PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 06/01/2017
Date Data Arrived at EDR: 06/09/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 126
Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 04/13/2018
Next Scheduled EDR Contact: 07/23/2018
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System
The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 11/18/2016
Date Data Arrived at EDR: 11/23/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 79
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 04/09/2018
Next Scheduled EDR Contact: 07/23/2018
Data Release Frequency: Quarterly

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25
Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25
Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Quarterly

MLTS: Material Licensing Tracking System
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 08/30/2016
Date Data Arrived at EDR: 09/08/2016
Date Made Active in Reports: 10/21/2016
Number of Days to Update: 43
Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 01/19/2018
Next Scheduled EDR Contact: 05/21/2018
Data Release Frequency: Quarterly

COAL ASH DOE: Steam-Electric Plant Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76
Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 03/09/2018
Next Scheduled EDR Contact: 06/18/2018
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 07/01/2014
Date Data Arrived at EDR: 09/10/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 03/06/2018
Next Scheduled EDR Contact: 06/18/2018
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 05/24/2017
Date Data Arrived at EDR: 11/30/2017
Date Made Active in Reports: 12/15/2017
Number of Days to Update: 15
Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 01/26/2018
Next Scheduled EDR Contact: 05/07/2018
Data Release Frequency: Varies

RADINFO: Radiation Information Database
The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 01/03/2018
Date Data Arrived at EDR: 01/04/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 99
Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 04/05/2018
Next Scheduled EDR Contact: 07/16/2018
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing
A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing
A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 07/31/2012
Date Data Arrived at EDR: 08/07/2012
Date Made Active in Reports: 09/18/2012
Number of Days to Update: 42

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 01/19/2018
Next Scheduled EDR Contact: 05/14/2018
Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 01/24/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 79

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 04/06/2018
Next Scheduled EDR Contact: 07/02/2018
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2015
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 09/28/2017
Number of Days to Update: 218

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 02/23/2018
Next Scheduled EDR Contact: 06/04/2018
Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 546

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 04/11/2018
Next Scheduled EDR Contact: 07/23/2018
Data Release Frequency: Semi-Annually

FUSRAP: Formerly Utilized Sites Remedial Action Program

DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.

Date of Government Version: 12/23/2016
Date Data Arrived at EDR: 12/27/2016
Date Made Active in Reports: 02/17/2017
Number of Days to Update: 52

Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 01/19/2018
Next Scheduled EDR Contact: 05/21/2018
Data Release Frequency: Varies

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 06/23/2017
Date Data Arrived at EDR: 10/11/2017
Date Made Active in Reports: 11/03/2017
Number of Days to Update: 23

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 02/23/2018
Next Scheduled EDR Contact: 06/04/2018
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 01/09/2018
Date Data Arrived at EDR: 02/06/2018
Date Made Active in Reports: 03/02/2018
Number of Days to Update: 24

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 04/06/2018
Next Scheduled EDR Contact: 07/16/2018
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites

A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)

The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data

A listing of minor source facilities.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 10/29/2017
Date Data Arrived at EDR: 11/28/2017
Date Made Active in Reports: 01/12/2018
Number of Days to Update: 45

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 02/28/2018
Next Scheduled EDR Contact: 06/11/2018
Data Release Frequency: Semi-Annually

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing

This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 12/05/2005
Date Data Arrived at EDR: 02/29/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 49

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 03/02/2018
Next Scheduled EDR Contact: 06/11/2018
Data Release Frequency: Varies

US MINES 3: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 03/02/2018
Next Scheduled EDR Contact: 06/11/2018
Data Release Frequency: Varies

ABANDONED MINES: Abandoned Mines

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Date of Government Version: 12/20/2017
Date Data Arrived at EDR: 12/21/2017
Date Made Active in Reports: 03/23/2018
Number of Days to Update: 92

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 03/07/2018
Next Scheduled EDR Contact: 06/25/2018
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 02/21/2018
Date Data Arrived at EDR: 02/23/2018
Date Made Active in Reports: 03/23/2018
Number of Days to Update: 28

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 02/23/2018
Next Scheduled EDR Contact: 06/18/2018
Data Release Frequency: Quarterly

ECHO: Enforcement & Compliance History Information

ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 01/13/2018
Date Data Arrived at EDR: 01/19/2018
Date Made Active in Reports: 03/02/2018
Number of Days to Update: 42

Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 03/07/2018
Next Scheduled EDR Contact: 06/18/2018
Data Release Frequency: Quarterly

UXO: Unexploded Ordnance Sites

A listing of unexploded ordnance site locations

Date of Government Version: 09/30/2016
Date Data Arrived at EDR: 10/31/2017
Date Made Active in Reports: 01/12/2018
Number of Days to Update: 73

Source: Department of Defense
Telephone: 703-704-1564
Last EDR Contact: 04/13/2018
Next Scheduled EDR Contact: 07/30/2018
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

DOCKET HWC: Hazardous Waste Compliance Docket Listing
A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 01/04/2018
Date Data Arrived at EDR: 01/19/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 84
Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 03/02/2018
Next Scheduled EDR Contact: 06/11/2018
Data Release Frequency: Varies

FUELS PROGRAM: EPA Fuels Program Registered Listing
This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

Date of Government Version: 02/20/2018
Date Data Arrived at EDR: 02/21/2018
Date Made Active in Reports: 03/23/2018
Number of Days to Update: 30
Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 02/21/2018
Next Scheduled EDR Contact: 06/04/2018
Data Release Frequency: Quarterly

CA BOND EXP. PLAN: Bond Expenditure Plan
Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6
Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CORTESE: "Cortese" Hazardous Waste & Substances Sites List
The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

Date of Government Version: 02/08/2018
Date Data Arrived at EDR: 02/08/2018
Date Made Active in Reports: 02/08/2018
Number of Days to Update: 0
Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 03/27/2018
Next Scheduled EDR Contact: 07/09/2018
Data Release Frequency: Quarterly

DRYCLEANERS: Cleaner Facilities
A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 12/01/2017
Date Data Arrived at EDR: 02/02/2018
Date Made Active in Reports: 03/16/2018
Number of Days to Update: 42
Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 02/28/2018
Next Scheduled EDR Contact: 06/18/2018
Data Release Frequency: Annually

EMI: Emissions Inventory Data
Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2015
Date Data Arrived at EDR: 03/21/2017
Date Made Active in Reports: 08/15/2017
Number of Days to Update: 147
Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 03/23/2018
Next Scheduled EDR Contact: 07/02/2018
Data Release Frequency: Varies

ENF: Enforcement Action Listing

A listing of Water Board Enforcement Actions. Formal is everything except Oral/Verbal Communication, Notice of Violation, Expedited Payment Letter, and Staff Enforcement Letter.

Date of Government Version: 01/22/2018
Date Data Arrived at EDR: 01/24/2018
Date Made Active in Reports: 03/19/2018
Number of Days to Update: 54

Source: State Water Resoruces Control Board
Telephone: 916-445-9379
Last EDR Contact: 04/18/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Varies

Financial Assurance 1: Financial Assurance Information Listing

Financial Assurance information

Date of Government Version: 01/22/2018
Date Data Arrived at EDR: 01/24/2018
Date Made Active in Reports: 03/20/2018
Number of Days to Update: 55

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 04/18/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Varies

Financial Assurance 2: Financial Assurance Information Listing

A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 02/14/2018
Date Data Arrived at EDR: 02/16/2018
Date Made Active in Reports: 04/03/2018
Number of Days to Update: 46

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 02/08/2018
Next Scheduled EDR Contact: 05/28/2018
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method. This database begins with calendar year 1993.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 07/12/2017
Date Made Active in Reports: 10/17/2017
Number of Days to Update: 97

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 04/12/2018
Next Scheduled EDR Contact: 07/23/2018
Data Release Frequency: Annually

ICE: ICE

Contains data pertaining to the Permitted Facilities with Inspections / Enforcements sites tracked in Envirostor.

Date of Government Version: 02/20/2018
Date Data Arrived at EDR: 02/21/2018
Date Made Active in Reports: 04/03/2018
Number of Days to Update: 41

Source: Department of Toxic Subsances Control
Telephone: 877-786-9427
Last EDR Contact: 02/21/2018
Next Scheduled EDR Contact: 06/04/2018
Data Release Frequency: Quarterly

HIST CORTESE: Hazardous Waste & Substance Site List

The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

HWP: EnviroStor Permitted Facilities Listing
Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 02/20/2018
Date Data Arrived at EDR: 02/21/2018
Date Made Active in Reports: 04/03/2018
Number of Days to Update: 41
Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 02/21/2018
Next Scheduled EDR Contact: 06/04/2018
Data Release Frequency: Quarterly

HWT: Registered Hazardous Waste Transporter Database
A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 01/08/2018
Date Data Arrived at EDR: 01/09/2018
Date Made Active in Reports: 02/06/2018
Number of Days to Update: 28
Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 04/11/2018
Next Scheduled EDR Contact: 07/23/2018
Data Release Frequency: Quarterly

MINES: Mines Site Location Listing
A listing of mine site locations from the Office of Mine Reclamation.

Date of Government Version: 12/11/2017
Date Data Arrived at EDR: 12/12/2017
Date Made Active in Reports: 01/12/2018
Number of Days to Update: 31
Source: Department of Conservation
Telephone: 916-322-1080
Last EDR Contact: 03/14/2018
Next Scheduled EDR Contact: 06/25/2018
Data Release Frequency: Quarterly

MWMP: Medical Waste Management Program Listing
The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 02/27/2018
Date Data Arrived at EDR: 03/05/2018
Date Made Active in Reports: 04/16/2018
Number of Days to Update: 42
Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 03/06/2018
Next Scheduled EDR Contact: 06/18/2018
Data Release Frequency: Varies

NPDES: NPDES Permits Listing
A listing of NPDES permits, including stormwater.

Date of Government Version: 02/14/2018
Date Data Arrived at EDR: 02/14/2018
Date Made Active in Reports: 03/15/2018
Number of Days to Update: 29
Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 03/14/2018
Next Scheduled EDR Contact: 05/28/2018
Data Release Frequency: Quarterly

PEST LIC: Pesticide Regulation Licenses Listing
A listing of licenses and certificates issued by the Department of Pesticide Regulation. The DPR issues licenses and/or certificates to: Persons and businesses that apply or sell pesticides; Pest control dealers and brokers; Persons who advise on agricultural pesticide applications.

Date of Government Version: 03/05/2018
Date Data Arrived at EDR: 03/05/2018
Date Made Active in Reports: 04/19/2018
Number of Days to Update: 45
Source: Department of Pesticide Regulation
Telephone: 916-445-4038
Last EDR Contact: 03/05/2018
Next Scheduled EDR Contact: 06/18/2018
Data Release Frequency: Quarterly

PROC: Certified Processors Database
A listing of certified processors.

Date of Government Version: 12/11/2017
Date Data Arrived at EDR: 12/12/2017
Date Made Active in Reports: 01/16/2018
Number of Days to Update: 35
Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 03/14/2018
Next Scheduled EDR Contact: 06/25/2018
Data Release Frequency: Quarterly

NOTIFY 65: Proposition 65 Records
Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 12/14/2017
Date Data Arrived at EDR: 12/15/2017
Date Made Active in Reports: 01/16/2018
Number of Days to Update: 32
Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 03/14/2018
Next Scheduled EDR Contact: 07/02/2018
Data Release Frequency: No Update Planned

UIC: UIC Listing
A listing of wells identified as underground injection wells, in the California Oil and Gas Wells database.

Date of Government Version: 12/11/2017
Date Data Arrived at EDR: 12/12/2017
Date Made Active in Reports: 01/17/2018
Number of Days to Update: 36
Source: Deaprtment of Conservation
Telephone: 916-445-2408
Last EDR Contact: 03/14/2018
Next Scheduled EDR Contact: 06/25/2018
Data Release Frequency: Varies

WASTEWATER PITS: Oil Wastewater Pits Listing
Water officials discovered that oil producers have been dumping chemical-laden wastewater into hundreds of unlined pits that are operating without proper permits. Inspections completed by the Central Valley Regional Water Quality Control Board revealed the existence of previously unidentified waste sites. The water board?s review found that more than one-third of the region?s active disposal pits are operating without permission.

Date of Government Version: 04/15/2015
Date Data Arrived at EDR: 04/17/2015
Date Made Active in Reports: 06/23/2015
Number of Days to Update: 67
Source: RWQCB, Central Valley Region
Telephone: 559-445-5577
Last EDR Contact: 04/13/2018
Next Scheduled EDR Contact: 07/23/2018
Data Release Frequency: Varies

WDS: Waste Discharge System
Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9
Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 02/15/2018
Next Scheduled EDR Contact: 06/04/2018
Data Release Frequency: Quarterly

WIP: Well Investigation Program Case List
Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13
Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 03/21/2018
Next Scheduled EDR Contact: 07/09/2018
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants

The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Hist Auto: EDR Exclusive Historical Auto Stations

EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Hist Cleaner: EDR Exclusive Historical Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF: Recovered Government Archive Solid Waste Facilities List

The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Resources Recycling and Recovery in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/13/2014
Number of Days to Update: 196

Source: Department of Resources Recycling and Recovery
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank

The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the State Water Resources Control Board in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 12/30/2013
Number of Days to Update: 182

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS

ALAMEDA COUNTY:

Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 01/09/2018
Date Data Arrived at EDR: 01/11/2018
Date Made Active in Reports: 02/22/2018
Number of Days to Update: 42

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 04/05/2018
Next Scheduled EDR Contact: 07/23/2018
Data Release Frequency: Semi-Annually

Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 01/22/2018
Date Data Arrived at EDR: 01/24/2018
Date Made Active in Reports: 03/28/2018
Number of Days to Update: 63

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 04/05/2018
Next Scheduled EDR Contact: 04/24/2047
Data Release Frequency: Semi-Annually

AMADOR COUNTY:

CUPA Facility List

Cupa Facility List

Date of Government Version: 03/01/2018
Date Data Arrived at EDR: 03/05/2018
Date Made Active in Reports: 03/15/2018
Number of Days to Update: 10

Source: Amador County Environmental Health
Telephone: 209-223-6439
Last EDR Contact: 02/28/2018
Next Scheduled EDR Contact: 06/18/2018
Data Release Frequency: Varies

BUTTE COUNTY:

CUPA Facility Listing

Cupa facility list.

Date of Government Version: 04/21/2017
Date Data Arrived at EDR: 04/25/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 106

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 04/05/2018
Next Scheduled EDR Contact: 07/23/2018
Data Release Frequency: No Update Planned

CALVERAS COUNTY:

CUPA Facility Listing
Cupa Facility Listing

Date of Government Version: 01/25/2018
Date Data Arrived at EDR: 01/26/2018
Date Made Active in Reports: 03/14/2018
Number of Days to Update: 47

Source: Calveras County Environmental Health
Telephone: 209-754-6399
Last EDR Contact: 03/26/2018
Next Scheduled EDR Contact: 07/09/2018
Data Release Frequency: Quarterly

COLUSA COUNTY:

CUPA Facility List
Cupa facility list.

Date of Government Version: 02/26/2018
Date Data Arrived at EDR: 03/01/2018
Date Made Active in Reports: 03/15/2018
Number of Days to Update: 14

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 02/14/2018
Next Scheduled EDR Contact: 05/21/2018
Data Release Frequency: Semi-Annually

CONTRA COSTA COUNTY:

Site List
List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 02/22/2018
Date Data Arrived at EDR: 02/27/2018
Date Made Active in Reports: 04/16/2018
Number of Days to Update: 48

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 01/29/2018
Next Scheduled EDR Contact: 05/14/2018
Data Release Frequency: Semi-Annually

DEL NORTE COUNTY:

CUPA Facility List
Cupa Facility list

Date of Government Version: 01/05/2018
Date Data Arrived at EDR: 02/02/2018
Date Made Active in Reports: 03/14/2018
Number of Days to Update: 40

Source: Del Norte County Environmental Health Division
Telephone: 707-465-0426
Last EDR Contact: 01/29/2018
Next Scheduled EDR Contact: 05/14/2018
Data Release Frequency: Varies

EL DORADO COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 03/05/2018
Date Data Arrived at EDR: 03/08/2018
Date Made Active in Reports: 04/16/2018
Number of Days to Update: 39

Source: El Dorado County Environmental Management Department
Telephone: 530-621-6623
Last EDR Contact: 01/29/2018
Next Scheduled EDR Contact: 05/14/2018
Data Release Frequency: Varies

FRESNO COUNTY:

CUPA Resources List

Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 03/01/2018
Date Data Arrived at EDR: 03/05/2018
Date Made Active in Reports: 03/14/2018
Number of Days to Update: 9

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 03/06/2018
Next Scheduled EDR Contact: 07/16/2018
Data Release Frequency: Semi-Annually

GLENN COUNTY:

CUPA Facility List

Cupa facility list

Date of Government Version: 01/22/2018
Date Data Arrived at EDR: 01/24/2018
Date Made Active in Reports: 03/14/2018
Number of Days to Update: 49

Source: Glenn County Air Pollution Control District
Telephone: 830-934-6500
Last EDR Contact: 04/18/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Varies

HUMBOLDT COUNTY:

CUPA Facility List

CUPA facility list.

Date of Government Version: 08/03/2017
Date Data Arrived at EDR: 08/08/2017
Date Made Active in Reports: 10/16/2017
Number of Days to Update: 69

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 02/05/2018
Next Scheduled EDR Contact: 06/04/2018
Data Release Frequency: Semi-Annually

IMPERIAL COUNTY:

CUPA Facility List

Cupa facility list.

Date of Government Version: 01/22/2018
Date Data Arrived at EDR: 01/26/2018
Date Made Active in Reports: 03/14/2018
Number of Days to Update: 47

Source: San Diego Border Field Office
Telephone: 760-339-2777
Last EDR Contact: 04/18/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Varies

INYO COUNTY:

CUPA Facility List
Cupa facility list.

Date of Government Version: 06/08/2017
Date Data Arrived at EDR: 06/09/2017
Date Made Active in Reports: 08/04/2017
Number of Days to Update: 56

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 03/28/2018
Next Scheduled EDR Contact: 06/04/2018
Data Release Frequency: Varies

KERN COUNTY:

Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 02/02/2018
Date Data Arrived at EDR: 02/02/2018
Date Made Active in Reports: 03/28/2018
Number of Days to Update: 54

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 02/01/2018
Next Scheduled EDR Contact: 05/21/2018
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 11/14/2017
Date Data Arrived at EDR: 11/17/2017
Date Made Active in Reports: 12/15/2017
Number of Days to Update: 28

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 03/14/2018
Next Scheduled EDR Contact: 06/04/2018
Data Release Frequency: Varies

LAKE COUNTY:

CUPA Facility List
Cupa facility list

Date of Government Version: 02/06/2018
Date Data Arrived at EDR: 02/09/2018
Date Made Active in Reports: 03/14/2018
Number of Days to Update: 33

Source: Lake County Environmental Health
Telephone: 707-263-1164
Last EDR Contact: 04/16/2018
Next Scheduled EDR Contact: 07/30/2018
Data Release Frequency: Varies

LASSEN COUNTY:

CUPA Facility List
Cupa facility list

Date of Government Version: 01/22/2018
Date Data Arrived at EDR: 01/24/2018
Date Made Active in Reports: 03/14/2018
Number of Days to Update: 49

Source: Lassen County Environmental Health
Telephone: 530-251-8528
Last EDR Contact: 04/18/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Varies

LOS ANGELES COUNTY:

San Gabriel Valley Areas of Concern
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office.

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206
Source: EPA Region 9
Telephone: 415-972-3178
Last EDR Contact: 03/14/2018
Next Scheduled EDR Contact: 07/02/2018
Data Release Frequency: No Update Planned

HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 01/16/2018
Date Data Arrived at EDR: 01/23/2018
Date Made Active in Reports: 03/20/2018
Number of Days to Update: 56
Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 04/05/2018
Next Scheduled EDR Contact: 07/23/2018
Data Release Frequency: Semi-Annually

List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 01/16/2018
Date Data Arrived at EDR: 01/16/2018
Date Made Active in Reports: 02/14/2018
Number of Days to Update: 29
Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 04/17/2018
Next Scheduled EDR Contact: 07/30/2018
Data Release Frequency: Varies

City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 01/01/2017
Date Data Arrived at EDR: 04/21/2017
Date Made Active in Reports: 10/09/2017
Number of Days to Update: 171
Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 04/11/2018
Next Scheduled EDR Contact: 07/30/2018
Data Release Frequency: Varies

Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 01/01/2018
Date Data Arrived at EDR: 01/17/2018
Date Made Active in Reports: 02/14/2018
Number of Days to Update: 28
Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 04/17/2018
Next Scheduled EDR Contact: 07/30/2018
Data Release Frequency: Annually

City of El Segundo Underground Storage Tank
Underground storage tank sites located in El Segundo city.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 04/19/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 21
Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 04/11/2018
Next Scheduled EDR Contact: 07/30/2018
Data Release Frequency: Semi-Annually

City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 03/09/2017
Date Data Arrived at EDR: 03/10/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 54
Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 04/18/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Annually

City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 01/04/2018
Date Data Arrived at EDR: 01/05/2018
Date Made Active in Reports: 01/18/2018
Number of Days to Update: 13

Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 04/05/2018
Next Scheduled EDR Contact: 07/23/2018
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 02/21/2018
Date Data Arrived at EDR: 02/22/2018
Date Made Active in Reports: 04/03/2018
Number of Days to Update: 40

Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 02/14/2018
Next Scheduled EDR Contact: 06/04/2018
Data Release Frequency: Varies

MARIN COUNTY:

Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 01/02/2018
Date Data Arrived at EDR: 01/05/2018
Date Made Active in Reports: 01/17/2018
Number of Days to Update: 12

Source: Public Works Department Waste Management
Telephone: 415-473-6647
Last EDR Contact: 03/29/2018
Next Scheduled EDR Contact: 07/16/2018
Data Release Frequency: Semi-Annually

MERCED COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 01/11/2018
Date Data Arrived at EDR: 01/12/2018
Date Made Active in Reports: 02/08/2018
Number of Days to Update: 27

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 02/14/2018
Next Scheduled EDR Contact: 06/04/2018
Data Release Frequency: Varies

MONO COUNTY:

CUPA Facility List
CUPA Facility List

Date of Government Version: 02/22/2018
Date Data Arrived at EDR: 02/27/2018
Date Made Active in Reports: 03/14/2018
Number of Days to Update: 15

Source: Mono County Health Department
Telephone: 760-932-5580
Last EDR Contact: 02/22/2018
Next Scheduled EDR Contact: 06/11/2018
Data Release Frequency: Varies

MONTEREY COUNTY:

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 03/27/2018
Date Data Arrived at EDR: 03/29/2018
Date Made Active in Reports: 04/16/2018
Number of Days to Update: 18

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 02/20/2018
Next Scheduled EDR Contact: 06/04/2018
Data Release Frequency: Varies

NAPA COUNTY:

Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 01/09/2017
Date Data Arrived at EDR: 01/11/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 50

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 02/22/2018
Next Scheduled EDR Contact: 06/11/2018
Data Release Frequency: No Update Planned

Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 02/22/2018
Date Data Arrived at EDR: 02/27/2018
Date Made Active in Reports: 03/29/2018
Number of Days to Update: 30

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 02/22/2018
Next Scheduled EDR Contact: 06/11/2018
Data Release Frequency: No Update Planned

NEVADA COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 01/31/2018
Date Data Arrived at EDR: 02/01/2018
Date Made Active in Reports: 03/14/2018
Number of Days to Update: 41

Source: Community Development Agency
Telephone: 530-265-1467
Last EDR Contact: 01/29/2018
Next Scheduled EDR Contact: 05/14/2018
Data Release Frequency: Varies

ORANGE COUNTY:

List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 02/05/2018
Date Data Arrived at EDR: 02/13/2018
Date Made Active in Reports: 04/03/2018
Number of Days to Update: 49

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 02/05/2018
Next Scheduled EDR Contact: 05/21/2018
Data Release Frequency: Annually

List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 02/05/2018
Date Data Arrived at EDR: 02/13/2018
Date Made Active in Reports: 03/20/2018
Number of Days to Update: 35

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 02/05/2018
Next Scheduled EDR Contact: 05/21/2018
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 01/02/2018
Date Data Arrived at EDR: 02/07/2018
Date Made Active in Reports: 03/28/2018
Number of Days to Update: 49

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 02/07/2018
Next Scheduled EDR Contact: 05/21/2018
Data Release Frequency: Quarterly

PLACER COUNTY:

Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 12/08/2017
Date Data Arrived at EDR: 12/12/2017
Date Made Active in Reports: 01/31/2018
Number of Days to Update: 50

Source: Placer County Health and Human Services
Telephone: 530-745-2363
Last EDR Contact: 03/15/2018
Next Scheduled EDR Contact: 06/18/2018
Data Release Frequency: Semi-Annually

PLUMAS COUNTY:

CUPA Facility List
Plumas County CUPA Program facilities.

Date of Government Version: 01/22/2018
Date Data Arrived at EDR: 01/24/2018
Date Made Active in Reports: 03/15/2018
Number of Days to Update: 50

Source: Plumas County Environmental Health
Telephone: 530-283-6355
Last EDR Contact: 04/18/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Varies

RIVERSIDE COUNTY:

Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 01/18/2018
Date Data Arrived at EDR: 01/23/2018
Date Made Active in Reports: 03/20/2018
Number of Days to Update: 56

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 03/19/2018
Next Scheduled EDR Contact: 07/02/2018
Data Release Frequency: Quarterly

Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 01/18/2018
Date Data Arrived at EDR: 01/23/2018
Date Made Active in Reports: 03/28/2018
Number of Days to Update: 64

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 03/19/2018
Next Scheduled EDR Contact: 07/02/2018
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 11/02/2017
Date Data Arrived at EDR: 01/03/2018
Date Made Active in Reports: 02/05/2018
Number of Days to Update: 33

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 04/04/2018
Next Scheduled EDR Contact: 07/16/2018
Data Release Frequency: Quarterly

Master Hazardous Materials Facility List

Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 11/02/2017
Date Data Arrived at EDR: 01/03/2018
Date Made Active in Reports: 02/14/2018
Number of Days to Update: 42

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 04/04/2018
Next Scheduled EDR Contact: 07/16/2018
Data Release Frequency: Quarterly

SAN BENITO COUNTY:

CUPA Facility List

Cupa facility list

Date of Government Version: 11/01/2017
Date Data Arrived at EDR: 11/03/2017
Date Made Active in Reports: 11/17/2017
Number of Days to Update: 14

Source: San Benito County Environmental Health
Telephone: N/A
Last EDR Contact: 02/15/2018
Next Scheduled EDR Contact: 05/21/2018
Data Release Frequency: Varies

SAN BERNARDINO COUNTY:

Hazardous Material Permits

This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 11/30/2017
Date Data Arrived at EDR: 12/01/2017
Date Made Active in Reports: 01/16/2018
Number of Days to Update: 46

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 04/06/2018
Next Scheduled EDR Contact: 05/21/2018
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 03/05/2018
Date Data Arrived at EDR: 03/07/2018
Date Made Active in Reports: 04/16/2018
Number of Days to Update: 40

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 03/07/2018
Next Scheduled EDR Contact: 06/18/2018
Data Release Frequency: Quarterly

Solid Waste Facilities
San Diego County Solid Waste Facilities.

Date of Government Version: 10/31/2015
Date Data Arrived at EDR: 11/07/2015
Date Made Active in Reports: 01/04/2016
Number of Days to Update: 58

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 04/18/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Varies

Environmental Case Listing
The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 02/28/2018
Next Scheduled EDR Contact: 06/18/2018
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

Local Oversite Facilities
A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 02/01/2018
Next Scheduled EDR Contact: 05/21/2018
Data Release Frequency: Quarterly

Underground Storage Tank Information
Underground storage tank sites located in San Francisco county.

Date of Government Version: 11/02/2017
Date Data Arrived at EDR: 11/07/2017
Date Made Active in Reports: 12/19/2017
Number of Days to Update: 42

Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 04/02/2018
Next Scheduled EDR Contact: 05/21/2018
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 12/20/2017
Date Data Arrived at EDR: 12/21/2017
Date Made Active in Reports: 02/01/2018
Number of Days to Update: 42

Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 03/14/2018
Next Scheduled EDR Contact: 07/02/2018
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 11/16/2017
Date Data Arrived at EDR: 11/17/2017
Date Made Active in Reports: 12/18/2017
Number of Days to Update: 31

Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 02/15/2018
Next Scheduled EDR Contact: 06/04/2018
Data Release Frequency: Varies

SAN MATEO COUNTY:

Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 12/12/2017
Date Data Arrived at EDR: 12/14/2017
Date Made Active in Reports: 01/11/2018
Number of Days to Update: 28
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 03/07/2018
Next Scheduled EDR Contact: 06/25/2018
Data Release Frequency: Annually

Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 01/22/2018
Date Data Arrived at EDR: 01/23/2018
Date Made Active in Reports: 04/11/2018
Number of Days to Update: 78
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 03/07/2018
Next Scheduled EDR Contact: 06/25/2018
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA Facility Listing
CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 09/08/2011
Date Data Arrived at EDR: 09/09/2011
Date Made Active in Reports: 10/07/2011
Number of Days to Update: 28
Source: Santa Barbara County Public Health Department
Telephone: 805-686-8167
Last EDR Contact: 02/15/2018
Next Scheduled EDR Contact: 06/04/2018
Data Release Frequency: Varies

SANTA CLARA COUNTY:

Cupa Facility List
Cupa facility list

Date of Government Version: 02/20/2018
Date Data Arrived at EDR: 02/20/2018
Date Made Active in Reports: 03/19/2018
Number of Days to Update: 27
Source: Department of Environmental Health
Telephone: 408-918-1973
Last EDR Contact: 02/15/2018
Next Scheduled EDR Contact: 06/04/2018
Data Release Frequency: Varies

HIST LUST - Fuel Leak Site Activity Report
A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22
Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LOP Listing
A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 03/03/2014
Date Data Arrived at EDR: 03/05/2014
Date Made Active in Reports: 03/18/2014
Number of Days to Update: 13
Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 02/22/2018
Next Scheduled EDR Contact: 06/11/2018
Data Release Frequency: Annually

Hazardous Material Facilities
Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 02/04/2018
Date Data Arrived at EDR: 02/06/2018
Date Made Active in Reports: 03/20/2018
Number of Days to Update: 42

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 02/01/2018
Next Scheduled EDR Contact: 05/21/2018
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA Facility List
CUPA facility listing.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 90

Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 02/15/2018
Next Scheduled EDR Contact: 06/04/2018
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 06/15/2017
Date Data Arrived at EDR: 06/19/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 51

Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 02/15/2018
Next Scheduled EDR Contact: 06/04/2018
Data Release Frequency: Varies

SOLANO COUNTY:

Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 12/14/2017
Date Data Arrived at EDR: 12/15/2017
Date Made Active in Reports: 01/12/2018
Number of Days to Update: 28

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 02/28/2018
Next Scheduled EDR Contact: 06/18/2018
Data Release Frequency: Quarterly

Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 03/08/2018
Date Data Arrived at EDR: 03/13/2018
Date Made Active in Reports: 03/29/2018
Number of Days to Update: 16

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 02/28/2018
Next Scheduled EDR Contact: 06/18/2018
Data Release Frequency: Quarterly

SONOMA COUNTY:

Cupa Facility List
Cupa Facility list

Date of Government Version: 03/01/2018
Date Data Arrived at EDR: 03/27/2018
Date Made Active in Reports: 04/16/2018
Number of Days to Update: 20

Source: County of Sonoma Fire & Emergency Services Department
Telephone: 707-565-1174
Last EDR Contact: 03/22/2018
Next Scheduled EDR Contact: 07/09/2018
Data Release Frequency: Varies

Leaking Underground Storage Tank Sites

A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 01/04/2018
Date Data Arrived at EDR: 01/09/2018
Date Made Active in Reports: 02/06/2018
Number of Days to Update: 28

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 03/22/2018
Next Scheduled EDR Contact: 07/09/2018
Data Release Frequency: Quarterly

STANISLAUS COUNTY:

CUPA Facility List

Cupa facility list

Date of Government Version: 02/06/2018
Date Data Arrived at EDR: 02/07/2018
Date Made Active in Reports: 03/16/2018
Number of Days to Update: 37

Source: Stanislaus County Department of Ennvironmental Protection
Telephone: 209-525-6751
Last EDR Contact: 04/16/2018
Next Scheduled EDR Contact: 07/30/2018
Data Release Frequency: Varies

SUTTER COUNTY:

Underground Storage Tanks

Underground storage tank sites located in Sutter county.

Date of Government Version: 01/08/2018
Date Data Arrived at EDR: 03/01/2018
Date Made Active in Reports: 03/30/2018
Number of Days to Update: 29

Source: Sutter County Department of Agriculture
Telephone: 530-822-7500
Last EDR Contact: 02/28/2018
Next Scheduled EDR Contact: 06/18/2018
Data Release Frequency: Semi-Annually

TEHAMA COUNTY:

CUPA Facility List

Cupa facilities

Date of Government Version: 01/26/2018
Date Data Arrived at EDR: 02/02/2018
Date Made Active in Reports: 03/21/2018
Number of Days to Update: 47

Source: Tehama County Department of Environmental Health
Telephone: 530-527-8020
Last EDR Contact: 02/01/2018
Next Scheduled EDR Contact: 05/21/2018
Data Release Frequency: Varies

TRINITY COUNTY:

CUPA Facility List

Cupa facility list

Date of Government Version: 01/22/2018
Date Data Arrived at EDR: 01/25/2018
Date Made Active in Reports: 03/19/2018
Number of Days to Update: 53

Source: Department of Toxic Substances Control
Telephone: 760-352-0381
Last EDR Contact: 04/18/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Varies

TULARE COUNTY:

CUPA Facility List
Cupa program facilities

Date of Government Version: 03/19/2018
Date Data Arrived at EDR: 03/22/2018
Date Made Active in Reports: 04/17/2018
Number of Days to Update: 26

Source: Tulare County Environmental Health Services Division
Telephone: 559-624-7400
Last EDR Contact: 03/06/2018
Next Scheduled EDR Contact: 05/21/2018
Data Release Frequency: Varies

TUOLUMNE COUNTY:

CUPA Facility List
Cupa facility list

Date of Government Version: 01/22/2018
Date Data Arrived at EDR: 01/25/2018
Date Made Active in Reports: 03/16/2018
Number of Days to Update: 50

Source: Divison of Environmental Health
Telephone: 209-533-5633
Last EDR Contact: 04/18/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Varies

VENTURA COUNTY:

Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 12/26/2017
Date Data Arrived at EDR: 01/25/2018
Date Made Active in Reports: 03/14/2018
Number of Days to Update: 48

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 04/23/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Quarterly

Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 12/01/2011
Date Data Arrived at EDR: 12/01/2011
Date Made Active in Reports: 01/19/2012
Number of Days to Update: 49

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 03/29/2018
Next Scheduled EDR Contact: 07/16/2018
Data Release Frequency: Annually

Listing of Underground Tank Cleanup Sites
Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 02/08/2018
Next Scheduled EDR Contact: 05/28/2018
Data Release Frequency: Quarterly

Medical Waste Program List
To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 12/26/2017
Date Data Arrived at EDR: 01/25/2018
Date Made Active in Reports: 03/20/2018
Number of Days to Update: 54

Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 04/23/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Quarterly

Underground Tank Closed Sites List
Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 02/28/2018
Date Data Arrived at EDR: 03/14/2018
Date Made Active in Reports: 03/30/2018
Number of Days to Update: 16
Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 03/14/2018
Next Scheduled EDR Contact: 06/25/2018
Data Release Frequency: Quarterly

YOLO COUNTY:

Underground Storage Tank Comprehensive Facility Report
Underground storage tank sites located in Yolo county.

Date of Government Version: 01/02/2018
Date Data Arrived at EDR: 01/09/2018
Date Made Active in Reports: 01/19/2018
Number of Days to Update: 10
Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 03/29/2018
Next Scheduled EDR Contact: 07/16/2018
Data Release Frequency: Annually

YUBA COUNTY:

CUPA Facility List
CUPA facility listing for Yuba County.

Date of Government Version: 02/01/2018
Date Data Arrived at EDR: 02/02/2018
Date Made Active in Reports: 03/21/2018
Number of Days to Update: 47
Source: Yuba County Environmental Health Department
Telephone: 530-749-7523
Last EDR Contact: 01/29/2018
Next Scheduled EDR Contact: 05/14/2018
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data
Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 01/03/2018
Date Data Arrived at EDR: 02/14/2018
Date Made Active in Reports: 03/22/2018
Number of Days to Update: 36
Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 02/14/2018
Next Scheduled EDR Contact: 05/28/2018
Data Release Frequency: No Update Planned

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 04/11/2017
Date Made Active in Reports: 07/27/2017
Number of Days to Update: 107
Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 04/23/2018
Next Scheduled EDR Contact: 07/23/2018
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 01/31/2018
Date Made Active in Reports: 03/09/2018
Number of Days to Update: 37

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 01/31/2018
Next Scheduled EDR Contact: 05/14/2018
Data Release Frequency: Quarterly

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 07/25/2017
Date Made Active in Reports: 09/25/2017
Number of Days to Update: 62

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 04/12/2018
Next Scheduled EDR Contact: 07/30/2018
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 02/23/2018
Date Made Active in Reports: 04/09/2018
Number of Days to Update: 45

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 02/21/2018
Next Scheduled EDR Contact: 06/04/2018
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 04/13/2017
Date Made Active in Reports: 07/14/2017
Number of Days to Update: 92

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 03/08/2018
Next Scheduled EDR Contact: 06/25/2018
Data Release Frequency: Annually

Oil/Gas Pipelines
Source: PennWell Corporation
Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Electric Power Transmission Line Data
Source: PennWell Corporation
This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish & Game
Telephone: 916-445-0411

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

STREET AND ADDRESS INFORMATION

GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

MOTTE RANCON DISTRIBUTION CENTER
26340 TRUMBLE ROAD
ROMOLAND, CA 92585

TARGET PROPERTY COORDINATES

Latitude (North):	33.738899 - 33° 44' 20.04''
Longitude (West):	117.183679 - 117° 11' 1.24''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	482985.5
UTM Y (Meters):	3733027.8
Elevation:	1431 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	5641314 ROMOLAND, CA
Version Date:	2012
North Map:	5641330 PERRIS, CA
Version Date:	2012

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principal investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

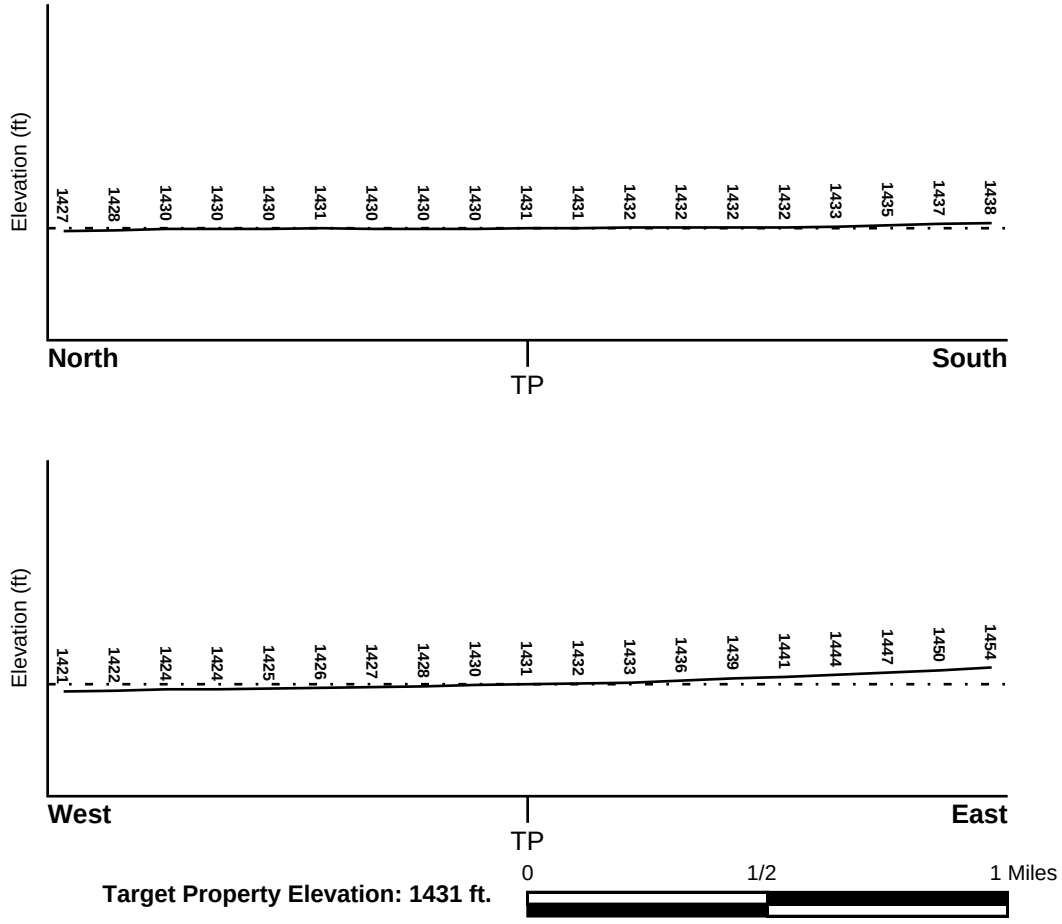
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General West

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Target Property Elevation: 1431 ft.

Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Flood Plain Panel at Target Property	FEMA Source Type
06065C2060H	FEMA FIRM Flood data

Additional Panels in search area:	FEMA Source Type
06065C1440H	FEMA FIRM Flood data
06065C1445H	FEMA FIRM Flood data
06065C2055H	FEMA FIRM Flood data

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
NOT AVAILABLE	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

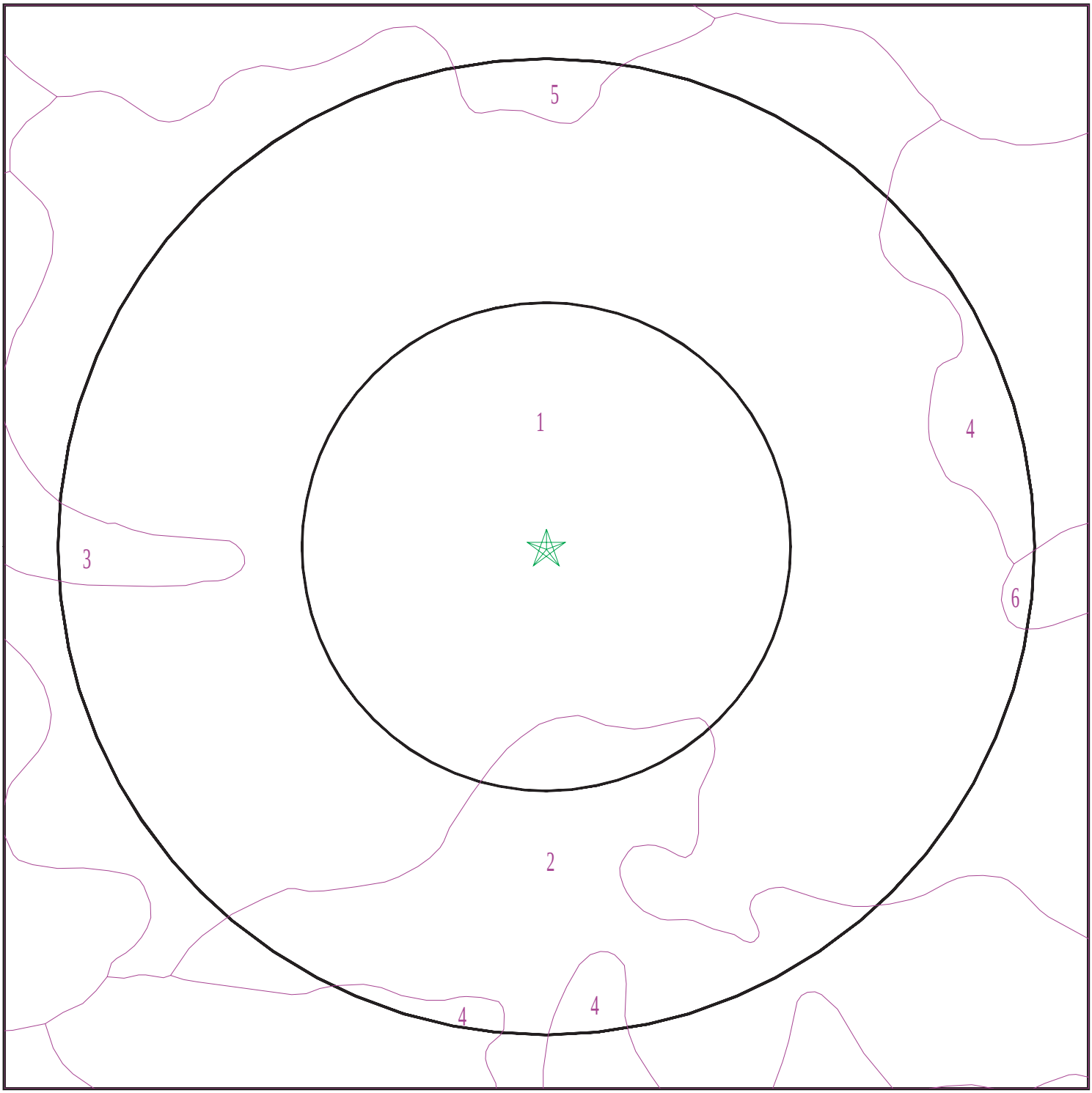
Era:	Mesozoic
System:	Cretaceous
Series:	Cretaceous granitic rocks
Code:	Kg *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Plutonic and Intrusive Rocks

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 5269785.2s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	Motte Rancon Distribution Center	CLIENT:	Rainwater Consulting
ADDRESS:	26340 Trumble Road ROMOLAND CA 92585	CONTACT:	Tim Doyle
LAT/LONG:	33.738899 / 117.183679	INQUIRY #:	5269785.2s
		DATE:	April 24, 2018 1:31 pm

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: MONSERATE

Soil Surface Texture: sandy loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	9 inches	sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 7.3 Min: 6.1
2	9 inches	27 inches	sandy clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 7.3 Min: 6.1
3	27 inches	44 inches	indurated	Not reported	Not reported	Max: 0.01 Min: 0	Max: Min:
4	44 inches	57 inches	cemented	Not reported	Not reported	Max: 0.01 Min: 0	Max: Min:
5	57 inches	70 inches	loamy coarse sand	Granular materials (35 pct. or less passing No. 200), Stone Fragments, Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 8.4 Min: 6.6

Soil Map ID: 2

Soil Component Name: GREENFIELD

Soil Surface Texture: sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information

	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	25 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.8 Min: 6.1
2	25 inches	42 inches	fine sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.8 Min: 6.1
3	42 inches	59 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 14 Min: 4	Max: 7.8 Min: 6.1
4	59 inches	72 inches	stratified loamy sand to sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 8.4 Min: 6.6

Soil Map ID: 3

Soil Component Name: EXETER

Soil Surface Texture: sandy loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	16 inches	sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 7.3 Min: 6.6
2	16 inches	37 inches	sandy clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 14 Min: 4	Max: 7.8 Min: 6.6
3	37 inches	50 inches	indurated	Not reported	Not reported	Max: 0.01 Min: 0	Max: Min:
4	50 inches	59 inches	stratified sandy loam to silt loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 4 Min: 1.4	Max: 8.4 Min: 7.4

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Map ID: 4

Soil Component Name: EXETER

Soil Surface Texture: sandy loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	16 inches	sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 7.3 Min: 6.6
2	16 inches	37 inches	sandy clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 14 Min: 4	Max: 7.8 Min: 6.6
3	37 inches	50 inches	indurated	Not reported	Not reported	Max: 0.01 Min: 0	Max: Min:
4	50 inches	59 inches	stratified sandy loam to silt loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 4 Min: 1.4	Max: 8.4 Min: 7.4

Soil Map ID: 5

Soil Component Name: MADERA

Soil Surface Texture: fine sandy loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Moderately well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information

	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	18 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 5.6
2	18 inches	25 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Fat Clay.	Max: 0.42 Min: 0.01	Max: 8.4 Min: 6.6
3	25 inches	37 inches	indurated	Not reported	Not reported	Max: 0.01 Min: 0	Max: Min:
4	37 inches	61 inches	stratified coarse sandy loam to clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay. FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 1.4 Min: 0.42	Max: 8.4 Min: 7.4

Soil Map ID: 6

Soil Component Name: MONSERATE

Soil Surface Texture: sandy loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information

	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	9 inches	sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 7.3 Min: 6.1
2	9 inches	18 inches	sandy clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 7.3 Min: 6.1
3	18 inches	44 inches	indurated	Not reported	Not reported	Max: 0.01 Min: 0	Max: Min:
4	44 inches	57 inches	cemented	Not reported	Not reported	Max: 0.01 Min: 0	Max: Min:
5	57 inches	70 inches	loamy coarse sand	Granular materials (35 pct. or less passing No. 200), Stone Fragments, Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 8.4 Min: 6.6

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
1	USGS40000137613	1/4 - 1/2 Mile South
A3	USGS40000137651	1/4 - 1/2 Mile ESE
B4	USGS40000137824	1/2 - 1 Mile North
C6	USGS40000137523	1/2 - 1 Mile South
D9	USGS40000137576	1/2 - 1 Mile SE
C10	USGS40000137518	1/2 - 1 Mile South
E12	USGS40000137850	1/2 - 1 Mile NNW
F15	USGS40000137861	1/2 - 1 Mile NNW
G18	USGS40000137582	1/2 - 1 Mile WSW
19	USGS40000137841	1/2 - 1 Mile NE

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

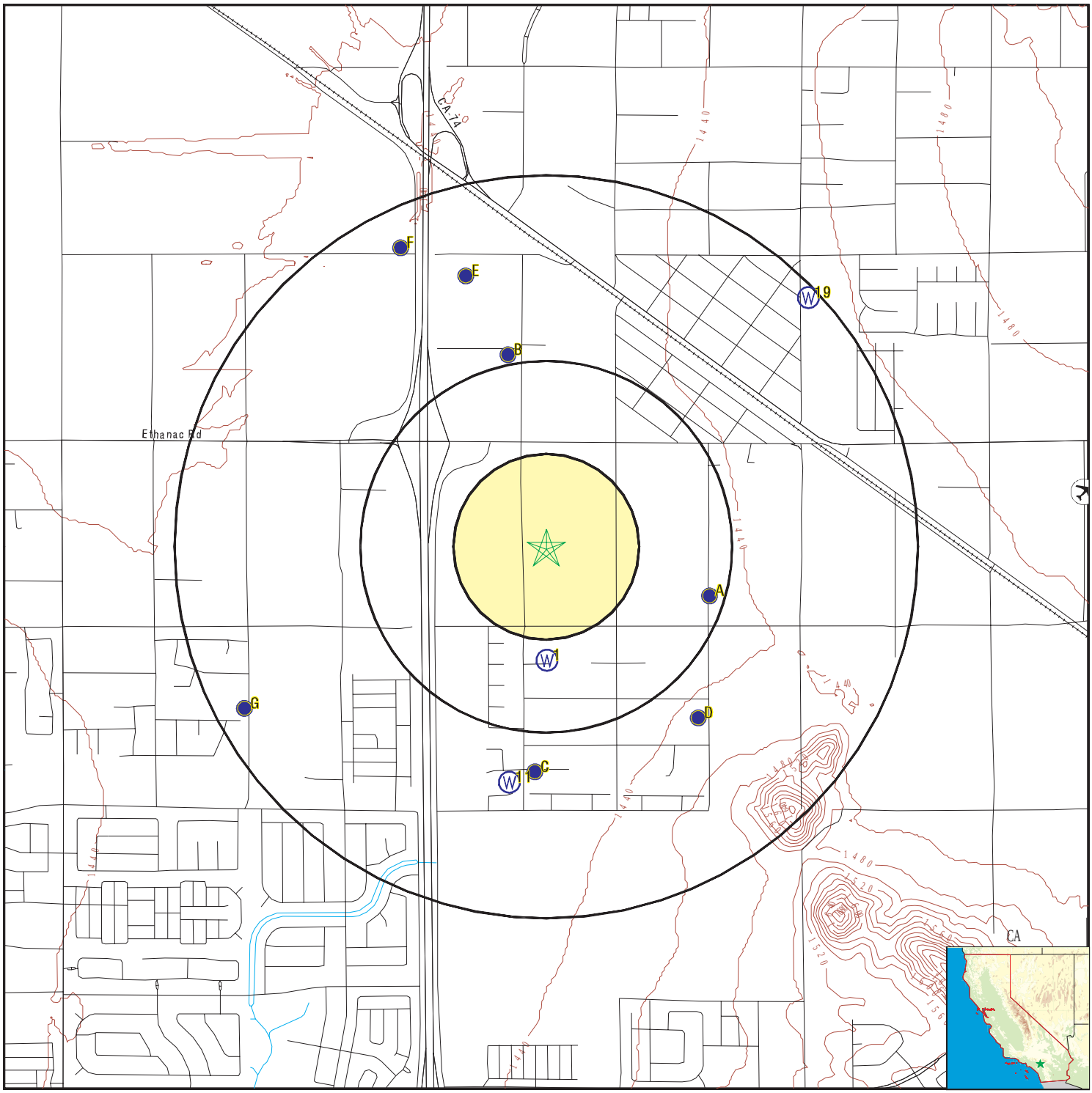
MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A2	CADW60000007754	1/4 - 1/2 Mile ESE
B5	CADW60000020473	1/2 - 1 Mile NNW
C7	CADW60000020478	1/2 - 1 Mile South
D8	CADW60000007755	1/2 - 1 Mile SE
11	CADW60000020477	1/2 - 1 Mile South
E13	CADW60000020472	1/2 - 1 Mile NNW
F14	CADW60000006162	1/2 - 1 Mile NNW
F16	CADW60000020470	1/2 - 1 Mile NNW
G17	CADW60000006165	1/2 - 1 Mile WSW

PHYSICAL SETTING SOURCE MAP - 5269785.2s



- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- Airports
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons

- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location
- HD Closest Hydrogeological Data
- Oil, gas or related wells

SITE NAME:	Motte Rancon Distribution Center	CLIENT:	Rainwater Consulting
ADDRESS:	26340 Trumble Road ROMOLAND CA 92585	CONTACT:	Tim Doyle
		INQUIRY #:	5269785.2s
LAT/LONG:	33.738899 / 117.183679	DATE:	April 24, 2018 1:31 pm

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

1
South
1/4 - 1/2 Mile
Higher

FED USGS **USGS40000137613**

Org. Identifier:	USGS-CA		
Formal name:	USGS California Water Science Center		
Monloc Identifier:	USGS-334404117105801		
Monloc name:	005S003W15L001S		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	18070202	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	33.7344649
Longitude:	-117.1836449	Sourcemap scale:	24000
Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	1429
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	California Coastal Basin aquifers		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19941015	Welldepth:	150
Welldepth units:	ft	Wellholedepth:	150
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 0

A2
ESE
1/4 - 1/2 Mile
Higher

CA WELLS **CADW60000007754**

Objectid:	7754
Latitude:	33.737
Longitude:	-117.1765
Site code:	337370N1171765W001
State well numbe:	05S03W15H001S
Local well name:	''
Well use id:	6
Well use descrip:	Unknown
County id:	33
County name:	Riverside
Basin code:	'8-5'
Basin desc:	San Jacinto
Dwr region id:	80238
Dwr region:	Southern Region Office
Site id:	CADW60000007754

A3
ESE
1/4 - 1/2 Mile
Higher

FED USGS **USGS40000137651**

Org. Identifier:	USGS-CA		
Formal name:	USGS California Water Science Center		
Monloc Identifier:	USGS-334413117102901		
Monloc name:	005S003W15H001S		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	18070202	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	33.7369648
Longitude:	-117.175589	Sourcemap scale:	24000
Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	1435
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	California Coastal Basin aquifers		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	Not Reported	Welldepth:	220
Welldepth units:	ft	Wellholedepth:	220
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 2

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1995-05-05	101.32		1993-11-19	110.20	

B4
North
1/2 - 1 Mile
Lower

FED USGS **USGS40000137824**

Org. Identifier:	USGS-CA		
Formal name:	USGS California Water Science Center		
Monloc Identifier:	USGS-334447117110301		
Monloc name:	005S003W10N001S		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	18070202	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	33.746409
Longitude:	-117.185034	Sourcemap scale:	24000
Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	1425
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	California Coastal Basin aquifers		
Formation type:	Not Reported		

Aquifer type:	Not Reported		
Construction date:	Not Reported	Welldepth:	Not Reported
Welldepth units:	Not Reported	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 2

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1995-09-13	95.63		1995-06-02	97.98	

B5
NNW
1/2 - 1 Mile
Lower

CA WELLS **CADW60000020473**

Objectid:	20473
Latitude:	33.7464
Longitude:	-117.1859
Site code:	337464N1171859W001
State well numbe:	05S03W10N001S
Local well name:	’’
Well use id:	6
Well use descrip:	Unknown
County id:	33
County name:	Riverside
Basin code:	’8-5’
Basin desc:	San Jacinto
Dwr region id:	80238
Dwr region:	Southern Region Office
Site id:	CADW60000020473

C6
South
1/2 - 1 Mile
Higher

FED USGS **USGS40000137523**

Org. Identifier:	USGS-CA		
Formal name:	USGS California Water Science Center		
Monloc Identifier:	USGS-334349117105801		
Monloc name:	005S003W15P002S		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	18070202	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	33.7302983
Longitude:	-117.1836449	Sourcemap scale:	24000
Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	1429
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	California Coastal Basin aquifers		
Formation type:	Not Reported		

Aquifer type:	Not Reported		
Construction date:	19941001	Welldepth:	160
Welldepth units:	ft	Wellholedepth:	160
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1994-10-02	32	

C7
South
1/2 - 1 Mile
Higher

CA WELLS **CADW60000020478**

Objectid:	20478
Latitude:	33.7303
Longitude:	-117.1845
Site code:	337303N1171845W001
State well numbe:	05S03W15P002S
Local well name:	''
Well use id:	6
Well use descrip:	Unknown
County id:	33
County name:	Riverside
Basin code:	'8-5'
Basin desc:	San Jacinto
Dwr region id:	80238
Dwr region:	Southern Region Office
Site id:	CADW60000020478

D8
SE
1/2 - 1 Mile
Higher

CA WELLS **CADW60000007755**

Objectid:	7755
Latitude:	33.7322
Longitude:	-117.177
Site code:	337322N1171770W001
State well numbe:	05S03W15Q001S
Local well name:	''
Well use id:	6
Well use descrip:	Unknown
County id:	33
County name:	Riverside
Basin code:	'8-5'
Basin desc:	San Jacinto
Dwr region id:	80238
Dwr region:	Southern Region Office
Site id:	CADW60000007755

D9
SE
1/2 - 1 Mile
Higher

FED USGS **USGS40000137576**

Org. Identifier:	USGS-CA		
Formal name:	USGS California Water Science Center		
Monloc Identifier:	USGS-334356117103101		
Monloc name:	005S003W15Q001S		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	18070202	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	33.7322428
Longitude:	-117.1761446	Sourcemap scale:	24000
Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	1439
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	California Coastal Basin aquifers		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19910404	Welldepth:	380
Welldepth units:	ft	Wellholedepth:	380
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1995-05-22	33.49	

C10
South
1/2 - 1 Mile
Higher

FED USGS **USGS40000137518**

Org. Identifier:	USGS-CA		
Formal name:	USGS California Water Science Center		
Monloc Identifier:	USGS-334347117110101		
Monloc name:	005S003W15P001S		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	18070202	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	33.7297428
Longitude:	-117.1844783	Sourcemap scale:	24000
Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	1428
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	California Coastal Basin aquifers		
Formation type:	Not Reported		

Aquifer type:	Not Reported		
Construction date:	19910709	Welldepth:	185
Welldepth units:	ft	Wellholedepth:	185
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1995-06-06	86.38	

11
South
1/2 - 1 Mile
Higher

CA WELLS **CADW60000020477**

Objectid:	20477
Latitude:	33.7297
Longitude:	-117.1854
Site code:	337297N1171854W001
State well numbe:	05S03W15P001S
Local well name:	’’
Well use id:	6
Well use descrip:	Unknown
County id:	33
County name:	Riverside
Basin code:	’8-5’
Basin desc:	San Jacinto
Dwr region id:	80238
Dwr region:	Southern Region Office
Site id:	CADW60000020477

E12
NNW
1/2 - 1 Mile
Lower

FED USGS **USGS40000137850**

Org. Identifier:	USGS-CA		
Formal name:	USGS California Water Science Center		
Monloc Identifier:	USGS-334458117111001		
Monloc name:	005S003W10M002S		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	18070202	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	33.7494644
Longitude:	-117.1869785	Sourcemap scale:	24000
Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	1422
Vert measure units:	feet	Vertacc measure val:	10
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	California Coastal Basin aquifers		
Formation type:	Not Reported		

Aquifer type:	Not Reported		
Construction date:	Not Reported	Welldepth:	333.7
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1995-05-05	96.22	

E13
NNW
1/2 - 1 Mile
Lower

CA WELLS **CADW60000020472**

Objectid:	20472
Latitude:	33.7495
Longitude:	-117.1879
Site code:	337495N1171879W001
State well numbe:	05S03W10M002S
Local well name:	’’
Well use id:	6
Well use descrip:	Unknown
County id:	33
County name:	Riverside
Basin code:	’8-5’
Basin desc:	San Jacinto
Dwr region id:	80238
Dwr region:	Southern Region Office
Site id:	CADW60000020472

F14
NNW
1/2 - 1 Mile
Lower

CA WELLS **CADW60000006162**

Objectid:	6162
Latitude:	33.750569
Longitude:	-117.189934
Site code:	337506N1171899W001
State well numbe:	Not Reported
Local well name:	’EMWD12744’
Well use id:	1
Well use descrip:	Observation
County id:	33
County name:	Riverside
Basin code:	’8-5’
Basin desc:	San Jacinto
Dwr region id:	80238
Dwr region:	Southern Region Office
Site id:	CADW60000006162

F15
NNW
1/2 - 1 Mile
Lower

FED USGS **USGS40000137861**

Org. Identifier:	USGS-CA		
Formal name:	USGS California Water Science Center		
Monloc Identifier:	USGS-334502117112201		
Monloc name:	005S003W09H002S		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	18070202	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	33.7505755
Longitude:	-117.190312	Sourcemap scale:	24000
Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	1420
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	California Coastal Basin aquifers		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19930920	Welldepth:	250.6
Welldepth units:	ft	Wellholedepth:	260
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 3

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1995-09-13	93.60		1995-06-26	96.28	
1995-04-13	96.00				

F16
NNW
1/2 - 1 Mile
Lower

CA WELLS **CADW60000020470**

Objectid:	20470
Latitude:	33.7506
Longitude:	-117.1912
Site code:	337506N1171912W001
State well numbe:	05S03W09H002S
Local well name:	’’
Well use id:	6
Well use descrip:	Unknown
County id:	33
County name:	Riverside
Basin code:	’8-5’
Basin desc:	San Jacinto
Dwr region id:	80238
Dwr region:	Southern Region Office
Site id:	CADW60000020470

G17
WSW
1/2 - 1 Mile
Lower

CA WELLS **CADW60000006165**

Objectid:	6165
Latitude:	33.732663
Longitude:	-117.197747
Site code:	337327N1171977W001
State well numbe:	Not Reported
Local well name:	'EMWD12765'
Well use id:	1
Well use descrip:	Observation
County id:	33
County name:	Riverside
Basin code:	'8-5'
Basin desc:	San Jacinto
Dwr region id:	80238
Dwr region:	Southern Region Office
Site id:	CADW60000006165

G18
WSW **FED USGS** **USGS40000137582**
1/2 - 1 Mile
Lower

Org. Identifier:	USGS-CA		
Formal name:	USGS California Water Science Center		
Monloc Identifier:	USGS-334357117114901		
Monloc name:	005S003W16P002S		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	18070202	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	33.7325205
Longitude:	-117.1978123	Sourcemap scale:	24000
Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	1425
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	California Coastal Basin aquifers		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	1971	Welldepth:	Not Reported
Welldepth units:	Not Reported	Wellholedepth:	568
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 0

19
NE **FED USGS** **USGS40000137841**
1/2 - 1 Mile
Higher

Org. Identifier:	USGS-CA		
Formal name:	USGS California Water Science Center		
Monloc Identifier:	USGS-334455117101401		
Monloc name:	005S003W11M002S		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	18070202	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	33.7486312
Longitude:	-117.1714222	Sourcemap scale:	24000

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	1451
Vert measure units:	feet	Vertacc measure val:	10
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	California Coastal Basin aquifers		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	Not Reported	Welldepth:	787
Welldepth units:	ft	Wellholedepth:	787
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 0

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
92585	6	0

Federal EPA Radon Zone for RIVERSIDE County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for RIVERSIDE COUNTY, CA

Number of sites tested: 12

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.117 pCi/L	100%	0%	0%
Living Area - 2nd Floor	0.450 pCi/L	100%	0%	0%
Basement	1.700 pCi/L	100%	0%	0%

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

HYDROLOGIC INFORMATION

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish & Game
Telephone: 916-445-0411

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Public Health
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

OTHER STATE DATABASE INFORMATION

California Oil and Gas Well Locations
Source: Department of Conservation
Telephone: 916-323-1779
Oil and Gas well locations in the state.

RADON

State Database: CA Radon
Source: Department of Health Services
Telephone: 916-324-2208
Radon Database for California

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

APPENDIX

D

Motte Rancon Distribution Center
26340 Trumble Road
ROMOLAND, CA 92585

Inquiry Number: 5269785.3
April 24, 2018

Certified Sanborn® Map Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

04/24/18

Site Name:

Motte Rancon Distribution Cent
26340 Trumble Road
ROMOLAND, CA 92585
EDR Inquiry # 5269785.3

Client Name:

Rainwater Consulting
24051 Golden Pheasant Lane
Murrieta, CA 92562
Contact: Tim Doyle

The Sanborn Library has been searched by EDR and maps covering the target property location as provided by Rainwater Consulting were identified for the years listed below. The Sanborn Library is the largest, most complete collection of fire insurance maps. The collection includes maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow, and others. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by the Sanborn Library LLC, the copyright holder for the collection. Results can be authenticated by visiting www.edrnet.com/sanborn.

The Sanborn Library is continually enhanced with newly identified map archives. This report accesses all maps in the collection as of the day this report was generated.

Certified Sanborn Results:

Certification # C699-47B9-8DEF

PO # 0424018

Project 182161-60A

UNMAPPED PROPERTY

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.

Sanborn® Library search results

Certification #: C699-47B9-8DEF

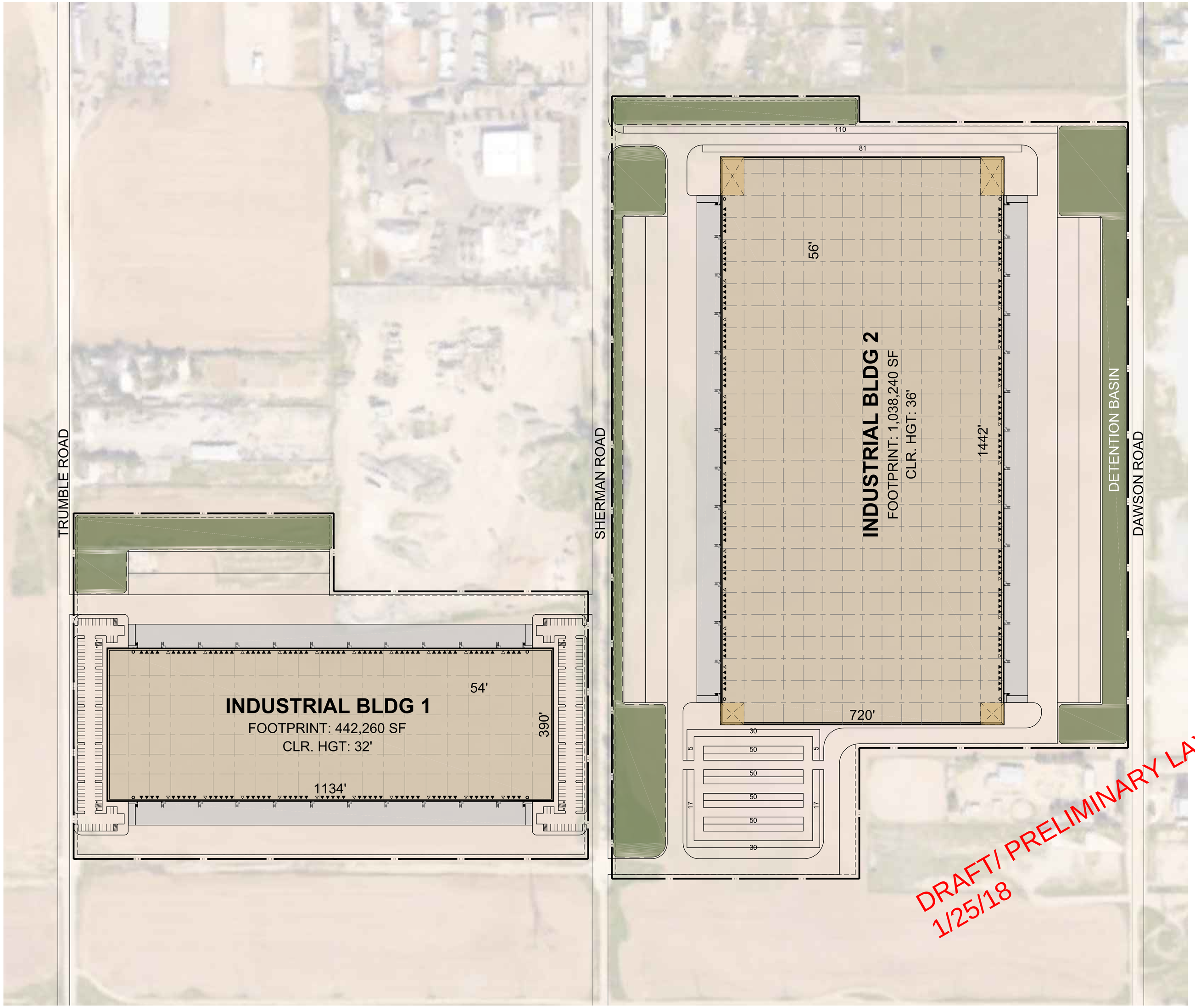
The Sanborn Library includes more than 1.2 million fire insurance maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow and others which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ☑ Library of Congress
- ☑ University Publications of America
- ☑ EDR Private Collection

The Sanborn Library LLC Since 1866™

Limited Permission To Make Copies

Rainwater Consulting (the client) is permitted to make up to FIVE photocopies of this Sanborn Map transmittal and each fire insurance map accompanying this report solely for the limited use of its customer. No one other than the client is authorized to make copies. Upon request made directly to an EDR Account Executive, the client may be permitted to make a limited number of additional photocopies. This permission is conditioned upon compliance by the client, its customer and their agents with EDR's copyright policy; a copy of which is available upon request.



DEVELOPMENT STANDARDS:

ZONING:	SP-M-M	
MAX. F.A.R.:		
MAX. COVERAGE:		
MAX. BLDG. HT.:	50 FT	3
BUILDING SETBACKS:		
FRONT:	25 FT	
SIDE:	0 FT	4
REAR:	0 FT	4
LANDSCAPE SETBACKS:		
FRONT:	10 FT	
SIDE:	0 FT	
REAR:	0 FT	
LANDSCAPE REQ	10%	1
OFF-STREET PARKING:		
STANDARD:	9X18	2
COMPACT:	8.5X16	
COMPACT %:	20%	
DRIVE AISLE:	24 FT	
FIRE LANE:		
OVERHANG:	2 FT	
TREE WELL:		
REQ. PARKING RATIO BY USE:		
WAREHOUSE	1/2000 SF	
OFFICE:	1/200 SF	

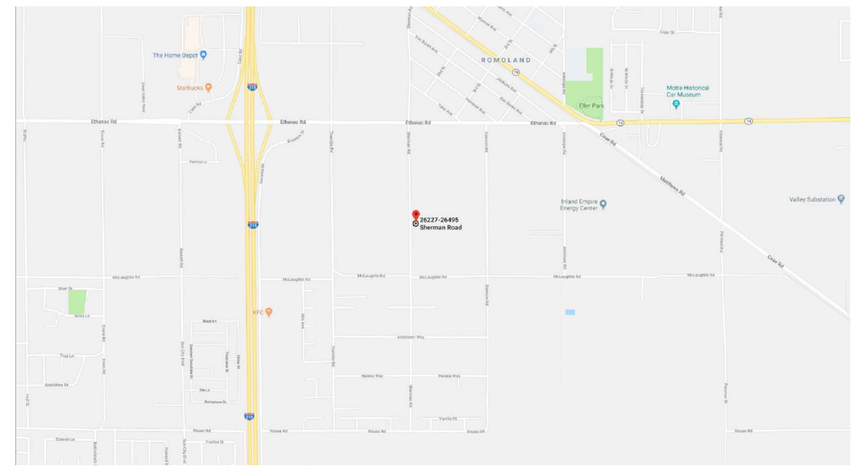
NOTES:

1 additional 10% parking must be landscaped

2 end stalls 11x18

3 Height up to 75 feet can be granted pursuant to section 18.34

4 Where the front, side, or rear yard adjoins a street, the minimum setback shall be 25 feet from the right-of-way line. Where the front, side or rear yard adjoins a lot zoned R-R, R-1, R-A, R-2, R-3, R-4, R-6, R-T, R-T-R, W-2-M, or SP with a residential use, the minimum setback shall be 25 feet from the property line. Where the front, side, or rear yard adjoins a lot with a zoning classification other than those specified in paragraph (1) above, there is no minimum setback.



This conceptual design is based upon a preliminary review of entitlement requirements and on unverified and possibly incomplete site and/or building information, and is intended merely to assist in exploring how the project might be developed.

1" = 100

0 50 100 200 500

NORTH

scheme: 1a

Conceptual Site Plan

Sherman Road
Romoland, CA 92585

WARE MALCOMB

SDG18-0010-00
01.25.2018

SHEET
1

Monday, April 23, 2018

Search Again

Property Information Center

Property Information for the 2014-2015 tax year as of January 1, 2014

Property Information

Parcel Number:	331110027-4
Property Address:	26340 TRUMBLE RD ROMOLAND CA 92585
Legal Description:	Lot 37 MB 011/038 TRUMBLE FARMS
Property Type:	N/A
Assessment Description:	2004 PALM HARBOR
Year Built	2004
Square Feet:	1944
Bedroom:	3
Bath:	2.0
Pool:	N
Lot Size:	1.00 Acres

Sales Information

Last Recorded Document:	06/2014
Recording Number:	0234737

Related Property Information

City Sphere:	MENIFEE
Supervisorial District:	MARION ASHLEY
Landuse Designation:	CITY
Agriculture Preserve:	NOT IN AN AGRICULTURE PRESERVE
School District:	ROMOLAND & PERRIS UNION HIGH
Water District:	EMWD
Fema Flood Plan:	FLOOD ZONE A

Assessed Value Information

Land	53,049
Structure	87,001
Full Value	140,050
Total Net	140,050

Assessment Information

Assessment Number:	331110027-4
Tax Rate Area:	026-232
Taxability Code:	0-00
Base Year:	2013

Parcel Map

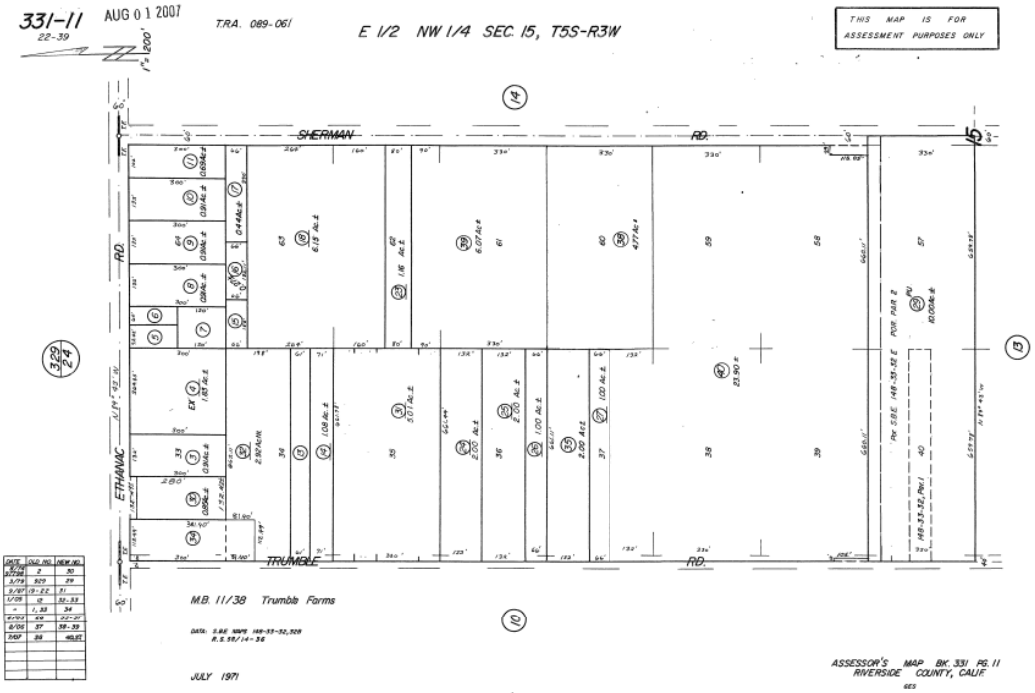
View Parcel Map

Tax Assessment District	N/A

Parcel Number: 331110027-4
Map Book: 331
Page/Block: 110
Parcel: 27
Check Digit: 4

HOW TO READ THE ASSESSOR'S MAP PAGE

The numerical parcel number on a map page consists of three main segments. The first three digits is the map book number. The second set of three numbers is the page/block number, and the third segment identifies the parcel number.



APPENDIX

E

ENVIRONMENTAL SITE ASSESSMENT
TRANSACTION SCREEN QUESTIONNAIRE

5. Introduction to Transaction Screen Questionnaire

5.1 *Process*--The *transaction screen process* consists of asking questions contained within the *transaction screen questionnaire* of *owners* and *occupants* of the *property*, observing site conditions at the property with direction provided by the *transaction screen questionnaire*, and, to the extent *reasonably ascertainable*, conducting limited research regarding certain government records and certain standard historical sources. The questions asked of *owners* are the same questions as those asked of *occupants*.

5.2 *Guide*--The *transaction screen questionnaire* is followed by a guide designed to assist the person completing the *transaction screen questionnaire*. The guide to the *transaction screen questionnaire* is set out in Sections 7-10 of this practice. The guide is divided into three sections: Guide for Owner/Occupant Inquiry, Guide to Site Visit, and Guide to Government Records/Historical Sources Inquiry.

5.2.1 To assist the *user*, its employee or agent, or the preparer in preparing a report, the guide repeats each of the questions set out in the *transaction screen questionnaire* in both the guide for *owner/occupant* inquiry and the guide to *site visit*. The questions regarding government records/historical sources inquiry are also repeated in the guide to that section.

5.2.2 The guide also describes the procedures to be followed to determine if reliance upon the information in a prior *transaction screen* is appropriate under this practice.

5.2.3 A *user*, his employee or agent, or *preparer* conducting the *transaction screen process* should not use the *transaction screen questionnaire* without reference to or without familiarity with the guide based on prior use of the guide.

5.3 The *user* may either conduct the *transaction screen process*, or delegate it to an employee or agent or may contract with a third party to prepare the questionnaire on behalf of the *user*. No matter who prepares the questionnaire, the *user* remains responsible for the decision to conduct limited environmental *due diligence* and the impact of that decision on risk management.

5.4 The *preparer* conducting the *transaction screen* process should use good faith efforts in determining answers to the questions set forth in the *transaction screen questionnaire*. The *user* should take time and care to check whatever records are in the *user's* possession and forward relevant information or specialized knowledge to the *preparer*.

5.5 *Knowledge*--All answers should be given to the best of the *owner's* or *occupant's* knowledge. The most knowledgeable person available should be chosen to answer the questions.

5.5.1 While the person conducting the *transaction screen* has an obligation to ask the questions in the *transaction screen questionnaire*, others may have no obligation to answer them.

5.5.2 The *transaction screen questionnaire* and the *transaction screen guide* sometimes include the phrase "to the best of your knowledge." This phrase does not impose a constructive knowledge standard. It is intended as an assurance to the person being questioned that he or she is not obligated to search out information he or she does not currently have in order to answer the particular question.

5.6 *Conclusions Regarding Afirmative* or *Unknown Answers*-Once a *transaction screen questionnaire* has been completed, it shall be presented to the user. Subject to 5.6 through 5.7, an affirmative, unknown, or no response is presumed to be a *potential environmental concern*. If any of the questions set forth in the *transaction screen questionnaire* are answered in the affirmative, the *preparer* must document the reason for the affirmative answer. If any of the questions are not answered or the answer is unknown, the *user* should document such nonresponse or answer of unknown and evaluate it in light of the other information obtained in the *transaction screen process*, including, in particular, the site visit and the government recordslhistorical sources inquiry. If the *user* decides no further inquiry is warranted after receiving no response, an answer of unknown, or an affirmative answer, the *user* must document the reasons for any such conclusion.

5.6.1 Upon obtaining an affirmative answer, an answer of unknown or no response, the *user* should first refer to the guide. The guide may provide sufficient explanation to allow a *user* to conclude that no further inquiry is appropriate with respect to the particular question.

5.6.2 If the guide to a particular question does not, in itself, permit a user to conclude that no further inquiry is appropriate, then the user should consider other information obtained from the *transaction screen process* relating to this question. For example, while on the site performing a *site visit*, a person may find a storage tank on the *property* and therefore answer Question 10 of the *transaction screen questionnaire* in the affirmative. However, during or subsequent to the *owner/occupant* inquiry, the *owner* may establish that substances now or historically contained in the tank (for example, water) are not likely to cause contamination.

5.6.3 If either the guide to the question or other information obtained during the *transaction screen process* does not permit a *user* to conclude no further inquiry is appropriate with respect to such question, then the user must determine, in the exercise of the *user's* reasonable business judgment, based upon the totality of unresolved affirmative answers or answers of unknown received during the *transaction screen process*, whether further inquiry may be limited to those specific issues identified as of concern.

5.7 *Presumption*--A presumption exists that further inquiry is necessary if an affirmative answer is given to a question or because the answer was unknown or no response was given. In rebutting this presumption, the *user* should evaluate information obtained from each component of the *transaction screen* process and consider whether sufficient information has been obtained to conclude that no further inquiry is necessary. The *user* must determine, in the exercise of the *user's* reasonable business judgment, the scope of such further inquiry.

5.8 *Further Inquiry*--Upon completing the *transaction screen questionnaire*, if the *user* concludes that further inquiry or action is needed (for example, consult with an environmental consultant, contractor, governmental authority, or perform additional governmental and/or historical records review), the *user* should proceed with such inquiry. (Note that if the *user* determines to proceed with a Phase I Environment Site Assessment, the *user* may apply the current Practice E 1527 or alternatively the provisions of EPA's regulation "Standards and Practices for All Appropriate Inquiries," 40 C.F.R. Part 312.)

5.9 *Signature*--The user and the *preparer* of the *transaction screen questionnaire* must complete and sign the questionnaire as provided at the end of the questionnaire.

6. Transaction Screen Questionnaire

6.1 *Persons to Be Questioned*-The following questions should be asked of *(1)* the current owner of the *property*, *(2)* any major occupant of the *property* or, if the property does not have any *major occupants*, at least 10 % of the occupants of the *property*, and *(3)* in addition to the current owner and the occupants identified in *(2)*, any *occupant* likely to be using, treating, generating, storing, or disposing of *hazardous substances* or *petroleum products* on or from the *property*. A major occupant is any *occupant* using at least 40 % of the leasable area of the *property* or any anchor tenant when the *property* is a shopping center. In a multifamily *property* containing both residential and commercial uses, the *preparer* does not need to ask questions of the residential *occupants*. The *preparer* should ask each person to answer all questions to the best of the respondent's *actual knowledge* and in good faith. When completing the *site visit* column, the *preparer* should be sure to observe the *property* and any buildings and other structures on the *property*. The guide to this *transaction screen questionnaire* (see Sections 7-10) provides further details on the appropriate use of this questionnaire. (See Note 2.)
NOTE 2-Unk = "unknown" or "no response."

Description of Site Address:

26340 Trumble Road, Menifee, Ca

APN's 331-110-027, 331-110-035, 331-110-041, 331-140-010 and 331-140-025

Question	Owner	Occupants (if applicable)	Observed During Site Visit	If yes, provide description
1a. Is the property used for an industrial use?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	
1b. Is any adjoining property used for an industrial use?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	
2a. Did you observe evidence or do you have any prior knowledge that the property has been used for an industrial use in the past?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	
2b. Did you observe evidence or do you have any prior knowledge that any adjoining property has been used for an industrial use in the past?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	
3a. Is the property used as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill, or as a waste treatment, storage, disposal, processing, or recycling facility (if applicable, identify which)?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	
3b. Is any adjoining property used as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill, or as a waste treatment, storage, disposal, processing, or recycling facility (if applicable, identify which)?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	
4a. Did you observe evidence or do you have any prior knowledge that the property has been used as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill, or as a waste treatment, storage, disposal, processing, or recycling facility (if applicable, identify which)?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	
4b. Did you observe evidence or do you have any prior knowledge that any adjoining property has been used as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill, or as a waste treatment, storage, disposal, processing, or recycling facility (if applicable, identify which)?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	
5a. Are there currently any damaged or discarded automotive or industrial batteries, pesticides, paints, or other chemicals in individual containers of >5 gal (19 L) in volume or 50 gal (190 L) in the aggregate, stored on or used at the property or at the facility?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	
5b. Did you observe evidence or do you have any prior knowledge that there have been previously any damaged or discarded automotive or industrial batteries, or pesticides, paints, or other chemicals in individual containers of >5 gal (19 L) in volume or 50 gal (190 L) in the aggregate, stored on or used at the property or at the facility?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	
6a. Are there currently any industrial drums (typically 55 gal (208 L)) or sacks of chemicals located on the property or at the facility?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	
6b. Did you observe evidence or do you have any prior knowledge that there have been previously any industrial drums (typically 55 gal (208 L)) or sacks of chemicals located on the property or at the facility?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	
7a. Did you observe evidence or do you have any prior knowledge that fill dirt has been brought onto the property that originated from a contaminated site?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	

' Unk = "unknown" or "no response"

Question	Owner	Occupants (if applicable)	Observed During Site Visit	If yes, provide description
7b. Did you observe evidence or do you have any prior knowledge that fill dirt has been brought onto the property that is of an unknown origin?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	
8a. Are there currently any pits, ponds, or lagoons located on the property in connection with waste treatment or waste disposal?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	
8b. Did you observe evidence or do you have any prior knowledge that there have been previously, any pits, ponds, or lagoons located on the property in connection with waste treatment or waste disposal?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	
9a. Is there currently any stained soil on the property?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	
9b. Did you observe evidence or do you have any prior knowledge that there has been previously, any stained soil on the property?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	
10a. Are there currently any registered or unregistered storage tanks (above or underground) located on the property?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	
10b. Did you observe evidence or do you have any prior knowledge that there have been previously, any registered or unregistered storage tanks (above or underground) located on the property?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	
11a. Are there currently any vent pipes, fill pipes, or access ways indicating a fill pipe protruding from the ground on the property or adjacent to any structure located on the property?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	
11b. Did you observe evidence or do you have any prior knowledge that there have been previously, any vent pipes, fill pipes, or access ways indicating a fill pipe protruding from the ground on the property or adjacent to any structure located on the property?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ○	
12a. Is there currently evidence of leaks, spills or staining by substances other than water, or foul odors, associated with any flooring, drains, walls, ceilings, or exposed grounds on the property?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	
12b. Did you observe evidence or do you have any prior knowledge that there have been previously any leaks, spills, or staining by substances other than water, or foul odors, associated with any flooring drains, walls, ceilings or exposed grounds on the property?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	
13a. If the property is served by a private well or non-public water system, is there evidence or do you have prior knowledge that contaminants have been identified in the well or system that exceed guidelines applicable to the water system?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	
13b. If the property is served by a private well or non-public water system, is there evidence or do you have prior knowledge that the well has been designated as contaminated by any government environment health agency?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	
14. Does the owner or occupant of the property have any knowledge of environmental liens or governmental notification relating to past or recurrent violations of environmental laws with respect to the property or any facility located on the property?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○		
15a. Has the owner or occupant of the property been informed of the past existence of hazardous substances or petroleum products with respect to the property or any facility located on the property?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○		
15b. Has the owner or occupant of the property been informed of the current existence of hazardous substances or petroleum products with respect to the property or any facility located on the property?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○		
15c. Has the owner or occupant of the property been informed of the past existence of environmental violations with respect to the property or any facility located on the property?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○		
15d. Has the owner or occupant of the property been informed of the current existence of environmental violations with respect to the property or any facility located on the property?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○		

Question	Owner	Occupants (if applicable)	Observed During Site Visit	If yes, provide description
16. Does the owner or occupant of the property have any knowledge of any environmental site assessment of the property or facility that indicated the presence of hazardous substances or petroleum products on, or contamination of, the property or recommended further assessment of the property?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○		
17. Does the owner or occupant of the property know of any past, threatened, or pending lawsuits or administrative proceedings concerning a release or threatened release of any hazardous substance or petroleum products involving the property by any owner or occupant of the property?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○		
18a. Does the property discharge waste-water (not including sanitary waste or storm water) onto or adjacent to the property and/or into a storm water system?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	
18b. Does the property discharge waste water (not including sanitary waste or storm water) onto or adjacent to the property and/or into a sanitary sewer system?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	
19. Did you observe evidence or do you have any prior knowledge that any hazardous substances or petroleum products, unidentified waste materials, tires, automotive or industrial batteries, or any other waste materials have been dumped above grade, buried and/or burned on the property?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	
20. Is there a transformer, capacitor, or any hydraulic equipment for which there are any records indicating the presence of PCBs?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	

Government Records/Historical Sources Inquiry

(See guide, Section 10)

21. Do any of the following federal, state, or tribal government record systems list the property or any property within the search distance noted below (where available):	Approximate Minimum Search Distance, miles (kilometres)		
Federal NPL site	1.0	Yes ○	No ●
Federal Delisted NPL site	0.5	Yes ○	No ●
Federal CERCLIS	0.5	Yes ○	No ●
Federal CERCLIS NFRAP site	0.5	Yes ○	No ●
Federal RCRA CORRACTS facilities	1.0	Yes ○	No ●
Federal RCRA non-CORRACTS TSD	0.5	Yes ○	No ●
Federal RCRA generators	property and adjoining properties	Yes ○	No ●
Federal institutional control/engineering control registries	property only		
Federal ERNS	property only	Yes ○	No ●

State and tribal lists of hazardous waste sites identified for investigation or remediation:

State-and tribal-equivalent NPL	1.0	Yes ○	No ●
State-and tribal-equivalent	0.5	Yes ○	No ●
State-and tribal-landfill andlor solid waste disposal site lists	0.5	Yes ○	No ●
State-and tribal-leaking storage tank lists	0.5	Yes ○	No ●
State and tribal registered storage tank lists	property and adjoiningproperties	Yes ○	No ●
State and tribal institutional controllengineering control registries	property only	Yes ○	No ●
State and tribal voluntary cleanup sites	0.5	Yes ○	No ●
State and tribal Brownfield sites	0.5	Yes ○	No ●

22. Based upon a review of fire insurance maps (10.2.3) or local street directories (10.2.3), all as specified in the guide, are any buildings or other improvements on the property or on an adjoiningproperty identified as having been used for an industrial use or uses likely to lead to contamination of the property? Yes ○ No ● Unavailable ○

Result Clear

The Owner questionnaire answers were provided was completed by:

Name: Carissa Hainsworth
Title: Project Manager
Firm: Mike Naggar & Associates
Address: 445 South D Street
Perris, CA 92570
Phone Number: 951-437-4329
Date: 05/03/2018
Role (s) at the site: Project Consultant
Number of years at the site: >1 year
Relationship to use (e.g. principal, employee, agent, consultant): Project Consultant/Manager

The Occupant questionnaire answers were provided by:

Name: Alejandro Soberanes
Title: Resident
Firm: N/A
Address: 26340 Trumble Road
Menifee, Ca
Phone Number: Unk.
Date: 4/28/18
Role (s) at the site: Occupant
Number of years at the site: Unk.
Realationship to use (e.g. principal, employee, agent, consultant):

The Site Visit questionnaire was completed by:

Name:
Title:
Firm:
Address:
Phone Number:
Date:
Role (s) at the site:
Number of years at the site:
Realationship to use (e.g. principal, employee, agent, consultant):

It is the user's responsibility to draw conclusions regarding afirmative or unknown answers.

The Government Records and Historical Sources Inquiry questionnaire was completed by:

Name: Tim Doyle
Title: Geologist
Firm: E-S
Address: 42284 Remington Avenue
Temecula, Ca 92590
Phone Number: 951-219-4752
Date: 4/28/18
Role (s) at the site: Assessor
Number of years at the site: N/A
Relationship to use (e.g. principal, employee, agent, consultant): N/A

User's relationship to the site (for example, owner, prospective purchaser, lender, etc.)

If the preparer (s) is different from the user, complete the following:

Name of User:
User's Address:
User's Phone Number:

Copies of the completed questionnaires have been filed at:

Copies of the completed questionnaires have been mailed or delivered to:

Preparer represents that to the best of the preparer's knowledge the above statements and facts are true and correct and to the best of the preparer's actual knowledge no material facts have been suppressed or misstated.

Signature: Carissa Hainsworth
Date: 05/03/2018

Signature: Tim Doyle
Date: 4/28/18

Signature: Alejandro Soberanes
Date: 4/28/18

To order additional copies of this questionaire,
contact ASTM International, Customer Service.
phone: (610) 832-9585
fax: (610) 9555
e-mail: service@astm.org

100 Barr Harbor Drive
PO Box C700
West Conshohocken, PA 19428-2959

Appendix 5: LID Infeasibility

LID Technical Infeasibility Analysis

Not Applicable

Appendix 6: BMP Design Details

BMP Sizing, Design Details and other Supporting Documentation

R 07 W | R 06 W | R 05 W | R 04 W | R 03 W | R 02 W | R 01 W | R 01 E | R 02 E | R 03 E | R 04 E | R 05 E

T 01 S
T 02 S
T 03 S
T 04 S
T 05 S
T 06 S
T 07 S
T 08 S

06	05	04	03	02	01
07	08	09	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

0.85 MiraLoma
0.61 RiversideNorth
0.54 RiversideSouth
0.68 PigeonPass
0.66 MorenoEast
0.85 Beaumont
0.88 PradoDam
0.51 Woodcrest
0.50 LakeMathews
0.68 PerrisReservoir
0.87 VistaGrandeGS
0.70 SanJacintoNWS
1.18 Idyllwild
0.58 SunCity
0.68 Winchester
0.90 HurkeyCreek
0.70 ElsinoreNWS
1.11 ElCarisoStation
0.77 WildomarLaCresta
0.52 SkinnerLake
0.65 Anza
0.77 SantaRosaPlateau
1.00 TemeculaNWS
0.64 AguangaValley

PROJECT SITE

Santa Ana River Watershed
Santa Margarita Watershed

JURUPA VALLEY, EASTVALE, NORCO, CORONA, RIVERSIDE, MORENO VALLEY, CALIMESA, BEAUMONT, SAN JACINTO, PERRIS, HEMET, CANYON LAKE, LAKE ELSINORE, MENIFEE, WILDOMAR, MURRIETA, TEMECULA

N

Rain Gage Locations

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

Isohyetal Map for the 85th Percentile 24 hour Storm Event

July 2011

Santa Ana Watershed - BMP Design Volume, V_{BMP}

(Rev. 10-2011)

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name	Albert A. Webb Associates	Date	8/5/2021
Designed by	TSW	Case No	PP2019-005
Company Project Number/Name	Menifee Commerce Center - Building 1		

BMP Identification

BMP NAME / ID: BMP-A

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

D_{85} = 0.61 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

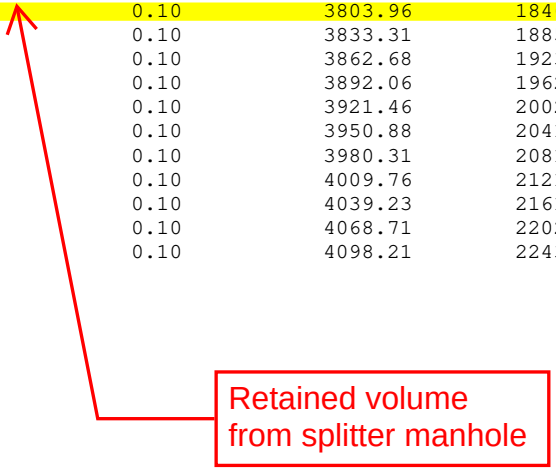
DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	Design Storm Depth (in)	Design Capture Volume, V_{BMP} (cubic feet)	Proposed Volume on Plans (cubic feet)
L-A	120,840	Ornamental Landscaping	0.1	0.11	13347.7			
SR-A	61,000	Ornamental Landscaping						
R-A	1,105,450	Roofs	1	0.89	986061.4			
H-A	892,820	Concrete or Asphalt	1	0.89	796395.4			
BMP-A	900	Ornamental Landscaping	0.1	0.11	99.4			
SELF TREATING-A	76,740	Ornamental Landscaping						
	2257750	Total			1795903.9	0.61	91291.8	92,000

Notes:

Project: Menifee Commerce Center
Basin Description: Basin-1

Contour Elevation	Contour Area (sq. ft)	Depth (ft)	Incremental Volume Avg. End (cu. ft)	Cumulative Volume Avg. End (cu. ft)	Incremental Volume Conic (cu. ft)	Cumulative Volume Conic (cu. ft)
1,424.00	0.00	N/A	N/A	0.00	N/A	0.00
1,424.10	1,604.56	0.10	80.23	80.23	53.49	53.49
1,424.20	3,229.94	0.10	241.73	321.95	237.03	290.52
1,424.30	4,876.37	0.10	405.32	727.27	402.50	693.02
1,424.40	6,544.12	0.10	571.02	1298.29	568.98	1262.00
1,424.50	8,233.46	0.10	738.88	2037.17	737.26	1999.27
1,424.60	9,944.67	0.10	908.91	2946.08	907.56	2906.83
1,424.70	11,678.01	0.10	1081.13	4027.21	1079.97	3986.80
1,424.80	13,433.74	0.10	1255.59	5282.80	1254.56	5241.37
1,424.90	15,212.17	0.10	1432.30	6715.10	1431.37	6672.74
1,425.00	17,013.60	0.10	1611.29	8326.38	1610.45	8283.19
1,425.10	18,838.35	0.10	1792.60	10118.98	1791.82	10075.01
1,425.20	20,686.73	0.10	1976.25	12095.24	1975.53	12050.55
1,425.30	21,719.68	0.10	2120.32	14215.56	2120.11	14170.66
1,425.40	22,004.04	0.10	2186.19	16401.74	2186.17	16356.83
1,425.50	22,288.57	0.10	2214.63	18616.37	2214.62	18571.44
1,425.60	22,573.26	0.10	2243.09	20859.46	2243.08	20814.52
1,425.70	22,858.11	0.10	2271.57	23131.03	2271.55	23086.07
1,425.80	23,143.12	0.10	2300.06	25431.09	2300.05	25386.12
1,425.90	23,428.29	0.10	2328.57	27759.67	2328.56	27714.68
1,426.00	23,713.63	0.10	2357.10	30116.76	2357.08	30071.76
1,426.10	23,999.12	0.10	2385.64	32502.40	2385.62	32457.38
1,426.20	24,284.78	0.10	2414.19	34916.59	2414.18	34871.56
1,426.30	24,570.59	0.10	2442.77	37359.36	2442.75	37314.32
1,426.40	24,856.57	0.10	2471.36	39830.72	2471.34	39785.66
1,426.50	25,142.71	0.10	2499.96	42330.68	2499.95	42285.61
1,426.60	25,429.01	0.10	2528.59	44859.27	2528.57	44814.18
1,426.70	25,715.47	0.10	2557.22	47416.49	2557.21	47371.39
1,426.80	26,002.09	0.10	2585.88	50002.37	2585.86	49957.26
1,426.90	26,288.87	0.10	2614.55	52616.92	2614.53	52571.79
1,427.00	26,575.81	0.10	2643.23	55260.15	2643.22	55215.01
1,427.10	26,862.92	0.10	2671.94	57932.09	2671.92	57886.94
1,427.20	27,150.18	0.10	2700.65	60632.74	2700.64	60587.58
1,427.30	27,437.61	0.10	2729.39	63362.13	2729.38	63316.96
1,427.40	27,725.19	0.10	2758.14	66120.27	2758.13	66075.08
1,427.50	28,012.94	0.10	2786.91	68907.18	2786.89	68861.98
1,427.60	28,300.85	0.10	2815.69	71722.87	2815.68	71677.66
1,427.70	28,588.92	0.10	2844.49	74567.36	2844.48	74522.13
1,427.80	28,877.15	0.10	2873.30	77440.66	2873.29	77395.42
1,427.90	29,165.54	0.10	2902.13	80342.80	2902.12	80297.55
1,428.00	29,454.09	0.10	2930.98	83273.78	2930.97	83228.52
1,428.10	29,742.81	0.10	2959.85	86233.62	2959.83	86188.35
1,428.20	30,031.68	0.10	2988.72	89222.35	2988.71	89177.06
1,428.30	30,320.72	0.10	3017.62	92239.97	3017.61	92194.67
1,428.40	30,609.92	0.10	3046.53	95286.50	3046.52	95241.19
1,428.50	30,899.28	0.10	3075.46	98361.96	3075.45	98316.64
1,428.60	31,188.81	0.10	3104.40	101466.36	3104.39	101421.03

1,428.70	31,478.49	0.10	3133.36	104599.73	3133.35	104554.39
1,428.80	31,768.34	0.10	3162.34	107762.07	3162.33	107716.72
1,428.90	32,058.35	0.10	3191.33	110953.41	3191.32	110908.04
1,429.00	32,348.53	0.10	3220.34	114173.75	3220.33	114128.37
1,429.10	32,638.87	0.10	3249.37	117423.12	3249.36	117377.73
1,429.20	32,929.37	0.10	3278.41	120701.53	3278.40	120656.13
1,429.30	33,220.03	0.10	3307.47	124009.00	3307.46	123963.59
1,429.40	33,510.86	0.10	3336.54	127345.55	3336.53	127300.13
1,429.50	33,801.85	0.10	3365.64	130711.18	3365.62	130665.75
1,429.60	34,093.00	0.10	3394.74	134105.92	3394.73	134060.48
1,429.70	34,384.32	0.10	3423.87	137529.79	3423.86	137484.34
1,429.80	34,675.80	0.10	3453.01	140982.80	3453.00	140937.34
1,429.90	34,967.44	0.10	3482.16	144464.96	3482.15	144419.49
1,430.00	35,259.25	0.10	3511.33	147976.29	3511.32	147930.81
1,430.10	35,551.22	0.10	3540.52	151516.82	3540.51	151471.33
1,430.20	35,843.35	0.10	3569.73	155086.54	3569.72	155041.04
1,430.30	36,135.65	0.10	3598.95	158685.49	3598.94	158639.98
1,430.40	36,428.10	0.10	3628.19	162313.68	3628.18	162268.16
1,430.50	36,720.73	0.10	3657.44	165971.12	3657.43	165925.59
1,430.60	37,013.51	0.10	3686.71	169657.83	3686.70	169612.30
1,430.70	37,306.46	0.10	3716.00	173373.83	3715.99	173328.28
1,430.80	37,599.57	0.10	3745.30	177119.13	3745.29	177073.58
1,430.90	37,892.84	0.10	3774.62	180893.75	3774.61	180848.19
1,431.00	38,186.28	0.10	3803.96	184697.71	3803.95	184652.13
1,431.10	38,479.88	0.10	3833.31	188531.02	3833.30	188485.43
1,431.20	38,773.64	0.10	3862.68	192393.69	3862.67	192348.10
1,431.30	39,067.57	0.10	3892.06	196285.75	3892.05	196240.15
1,431.40	39,361.66	0.10	3921.46	200207.22	3921.45	200161.60
1,431.50	39,655.91	0.10	3950.88	204158.09	3950.87	204112.47
1,431.60	39,950.32	0.10	3980.31	208138.41	3980.30	208092.77
1,431.70	40,244.90	0.10	4009.76	212148.17	4009.75	212102.53
1,431.80	40,539.64	0.10	4039.23	216187.39	4039.22	216141.74
1,431.90	40,834.55	0.10	4068.71	220256.10	4068.70	220210.44
1,432.00	41,129.62	0.10	4098.21	224354.31	4098.20	224308.64



Pump Rate Calculation

DMA-A

$$\frac{V_{BMP}}{t_{drain}} = Area * i = \ Q_{pump}$$

$$\frac{V_{BMP}}{t_{drain}} = Q_{pump}$$

$$Q_{pump} = \frac{ft^3}{hr} * \frac{1\ hr}{3600\ sec} * \frac{449\ gpm}{1\ \frac{ft^3}{sec}}$$

$$Q_{pump} = \frac{184{,}650\ ft^3}{24\ hr} * \frac{449}{3600}\ \frac{gpm}{\frac{ft^3}{hr}} = 960\ gpm$$

$$\boldsymbol{Q_{pump} = 990\ gpm}$$

Santa Ana Watershed - BMP Design Volume, V_{BMP}

(Rev. 10-2011)

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name	Albert A. Webb Associates	Date	8/5/2021
Designed by	TSW	Case No	PP2019-005
Company Project Number/Name	Menifee Commerce Center - Building 2		

BMP Identification

BMP NAME / ID: BMP-B

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

D_{85} = 0.61 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

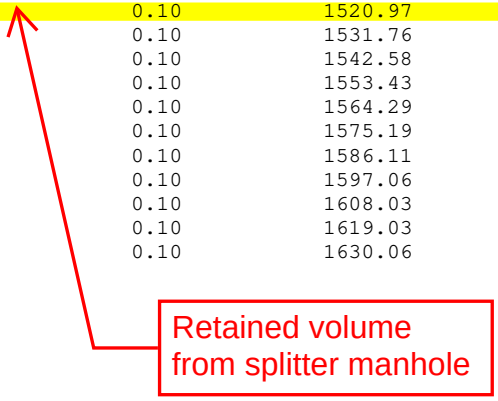
DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	Design Storm Depth (in)	Design Capture Volume, V_{BMP} (cubic feet)	Proposed Volume on Plans (cubic feet)
L-B	56,770	Ornamental Landscaping	0.1	0.11	6270.7			
SR-B	40,070	Ornamental Landscaping						
R-B	386,000	Roofs	1	0.89	344312			
H-B	392,410	Concrete or Asphalt	1	0.89	350029.7			
BMP-B	300	Ornamental Landscaping	0.1	0.11	33.1			
SELF TREATING-B	6,500							
	882050	Total			700645.5	0.61	35616.1	35,700

Notes:

Project: Menifee Commerce Center
Basin Description: Basin-2

Contour Elevation	Contour Area (sq. ft)	Depth (ft)	Incremental Volume Avg. End (cu. ft)	Cumulative Volume Avg. End (cu. ft)	Incremental Volume Conic (cu. ft)	Cumulative Volume Conic (cu. ft)
1,420.00	0.00	N/A	N/A	0.00	N/A	0.00
1,420.10	4,884.02	0.10	244.20	244.20	162.80	162.80
1,420.20	8,530.88	0.10	670.75	914.95	662.32	825.13
1,420.30	8,621.12	0.10	857.60	1772.55	857.60	1682.72
1,420.40	8,711.63	0.10	866.64	2639.18	866.63	2549.36
1,420.50	8,802.40	0.10	875.70	3514.89	875.70	3425.05
1,420.60	8,893.42	0.10	884.79	4399.68	884.79	4309.84
1,420.70	8,984.72	0.10	893.91	5293.58	893.90	5203.74
1,420.80	9,076.27	0.10	903.05	6196.63	903.05	6106.79
1,420.90	9,168.08	0.10	912.22	7108.85	912.21	7019.00
1,421.00	9,260.16	0.10	921.41	8030.26	921.41	7940.41
1,421.10	9,352.49	0.10	930.63	8960.89	930.63	8871.04
1,421.20	9,445.09	0.10	939.88	9900.77	939.88	9810.91
1,421.30	9,537.95	0.10	949.15	10849.93	949.15	10760.06
1,421.40	9,631.07	0.10	958.45	11808.38	958.45	11718.51
1,421.50	9,724.46	0.10	967.78	12776.15	967.77	12686.28
1,421.60	9,818.10	0.10	977.13	13753.28	977.12	13663.41
1,421.70	9,912.01	0.10	986.51	14739.79	986.50	14649.91
1,421.80	10,006.18	0.10	995.91	15735.70	995.91	15645.82
1,421.90	10,100.61	0.10	1005.34	16741.04	1005.34	16651.15
1,422.00	10,195.30	0.10	1014.80	17755.83	1014.79	17665.94
1,422.10	10,290.26	0.10	1024.28	18780.11	1024.27	18690.22
1,422.20	10,385.47	0.10	1033.79	19813.90	1033.78	19724.00
1,422.30	10,480.95	0.10	1043.32	20857.22	1043.32	20767.32
1,422.40	10,576.69	0.10	1052.88	21910.10	1052.88	21820.20
1,422.50	10,672.69	0.10	1062.47	22972.57	1062.47	22882.66
1,422.60	10,768.96	0.10	1072.08	24044.65	1072.08	23954.74
1,422.70	10,865.48	0.10	1081.72	25126.37	1081.72	25036.46
1,422.80	10,962.27	0.10	1091.39	26217.76	1091.38	26127.84
1,422.90	11,059.32	0.10	1101.08	27318.84	1101.08	27228.92
1,423.00	11,156.62	0.10	1110.80	28429.64	1110.79	28339.71
1,423.10	11,254.20	0.10	1120.54	29550.18	1120.54	29460.25
1,423.20	11,352.03	0.10	1130.31	30680.49	1130.31	30590.56
1,423.30	11,450.12	0.10	1140.11	31820.60	1140.10	31730.66
1,423.40	11,548.48	0.10	1149.93	32970.53	1149.93	32880.59
1,423.50	11,647.10	0.10	1159.78	34130.31	1159.78	34040.36
1,423.60	11,745.98	0.10	1169.65	35299.96	1169.65	35210.02
1,423.70	11,845.12	0.10	1179.56	36479.52	1179.55	36389.57
1,423.80	11,944.53	0.10	1189.48	37669.00	1189.48	37579.05
1,423.90	12,044.19	0.10	1199.44	38868.43	1199.43	38778.48
1,424.00	12,144.12	0.10	1209.42	40077.85	1209.41	39987.89
1,424.10	12,244.31	0.10	1219.42	41297.27	1219.42	41207.31
1,424.20	12,344.76	0.10	1229.45	42526.72	1229.45	42436.76
1,424.30	12,445.47	0.10	1239.51	43766.24	1239.51	43676.27
1,424.40	12,546.44	0.10	1249.60	45015.83	1249.59	44925.86
1,424.50	12,647.68	0.10	1259.71	46275.54	1259.70	46185.56
1,424.60	12,749.18	0.10	1269.84	47545.38	1269.84	47455.40

1,424.70	12,850.93	0.10	1280.01	48825.39	1280.00	48735.40
1,424.80	12,952.96	0.10	1290.19	50115.58	1290.19	50025.59
1,424.90	13,055.24	0.10	1300.41	51415.99	1300.41	51326.00
1,425.00	13,157.78	0.10	1310.65	52726.64	1310.65	52636.65
1,425.10	13,260.59	0.10	1320.92	54047.56	1320.92	53957.56
1,425.20	13,363.66	0.10	1331.21	55378.77	1331.21	55288.77
1,425.30	13,466.98	0.10	1341.53	56720.30	1341.53	56630.30
1,425.40	13,570.58	0.10	1351.88	58072.18	1351.87	57982.17
1,425.50	13,674.43	0.10	1362.25	59434.43	1362.25	59344.42
1,425.60	13,778.54	0.10	1372.65	60807.08	1372.65	60717.07
1,425.70	13,882.92	0.10	1383.07	62190.15	1383.07	62100.14
1,425.80	13,987.56	0.10	1393.52	63583.68	1393.52	63493.66
1,425.90	14,092.46	0.10	1404.00	64987.68	1404.00	64897.65
1,426.00	14,197.62	0.10	1414.50	66402.18	1414.50	66312.15
1,426.10	14,303.04	0.10	1425.03	67827.21	1425.03	67737.18
1,426.20	14,408.73	0.10	1435.59	69262.80	1435.59	69172.77
1,426.30	14,514.67	0.10	1446.17	70708.97	1446.17	70618.94
1,426.40	14,620.88	0.10	1456.78	72165.75	1456.77	72075.71
1,426.50	14,727.35	0.10	1467.41	73633.16	1467.41	73543.12
1,426.60	14,834.08	0.10	1478.07	75111.23	1478.07	75021.19
1,426.70	14,941.08	0.10	1488.76	76599.99	1488.75	76509.94
1,426.80	15,048.33	0.10	1499.47	78099.46	1499.47	78009.41
1,426.90	15,155.85	0.10	1510.21	79609.67	1510.21	79519.62
1,427.00	15,263.63	0.10	1520.97	81130.65	1520.97	81040.59
1,427.10	15,371.67	0.10	1531.76	82662.41	1531.76	82572.35
1,427.20	15,479.97	0.10	1542.58	84204.99	1542.58	84114.93
1,427.30	15,588.53	0.10	1553.43	85758.42	1553.42	85668.35
1,427.40	15,697.36	0.10	1564.29	87322.71	1564.29	87232.64
1,427.50	15,806.45	0.10	1575.19	88897.90	1575.19	88807.83
1,427.60	15,915.79	0.10	1586.11	90484.01	1586.11	90393.94
1,427.70	16,025.41	0.10	1597.06	92081.07	1597.06	91990.99
1,427.80	16,135.28	0.10	1608.03	93689.11	1608.03	93599.02
1,427.90	16,245.41	0.10	1619.03	95308.14	1619.03	95218.05
1,428.00	16,355.81	0.10	1630.06	96938.20	1630.06	96848.1



Pump Rate Calculation

DMA-B

$$\frac{V_{BMP}}{t_{drain}} = Area * i = \ Q_{pump}$$

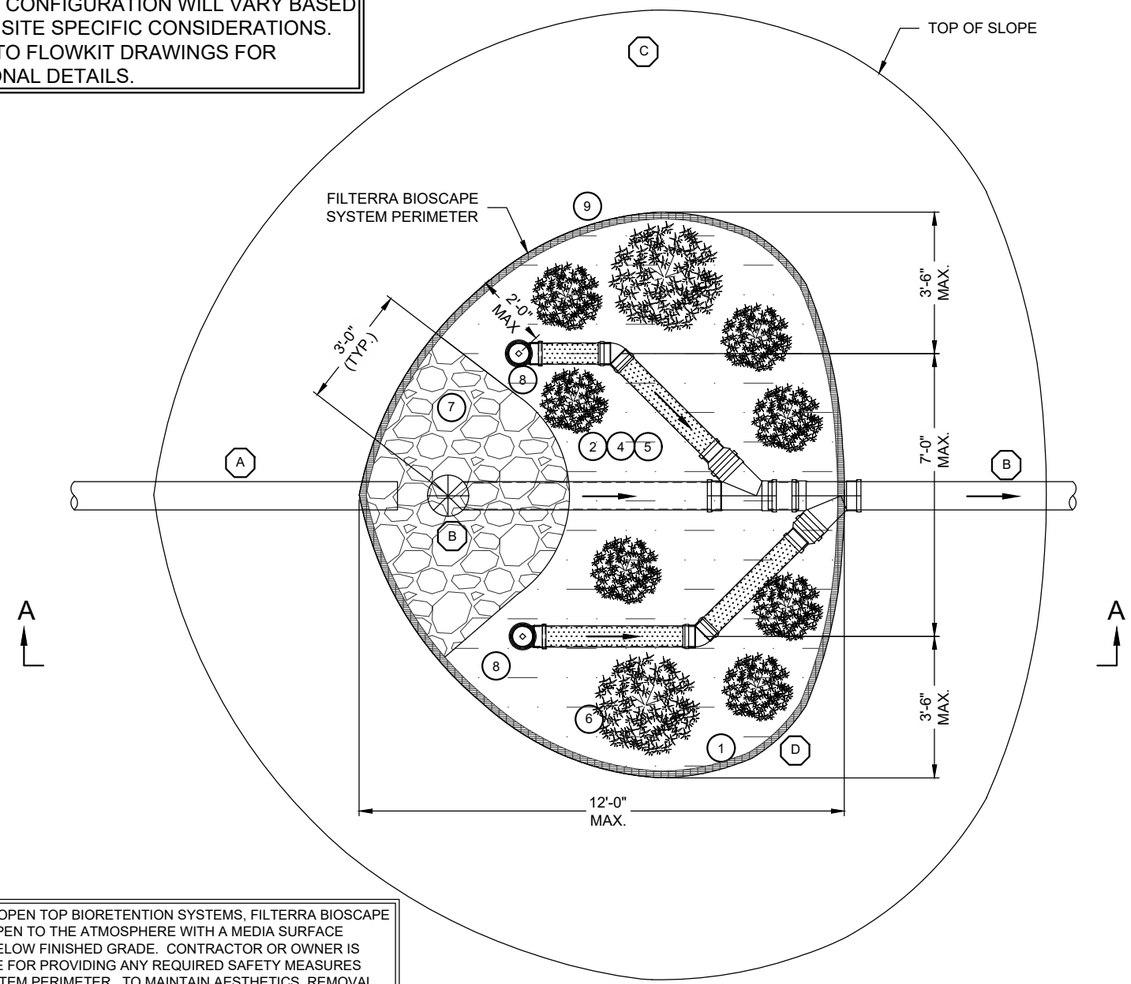
$$\frac{V_{BMP}}{t_{drain}} = Q_{pump}$$

$$Q_{pump} = \frac{ft^3}{hr} * \frac{1\ hr}{3600\ sec} * \frac{449\ gpm}{1\ \frac{ft^3}{sec}}$$

$$Q_{pump} = \frac{81{,}040\ ft^3}{24\ hr} * \frac{449}{3600}\ \frac{gpm}{\frac{ft^3}{hr}} = 421\ gpm$$

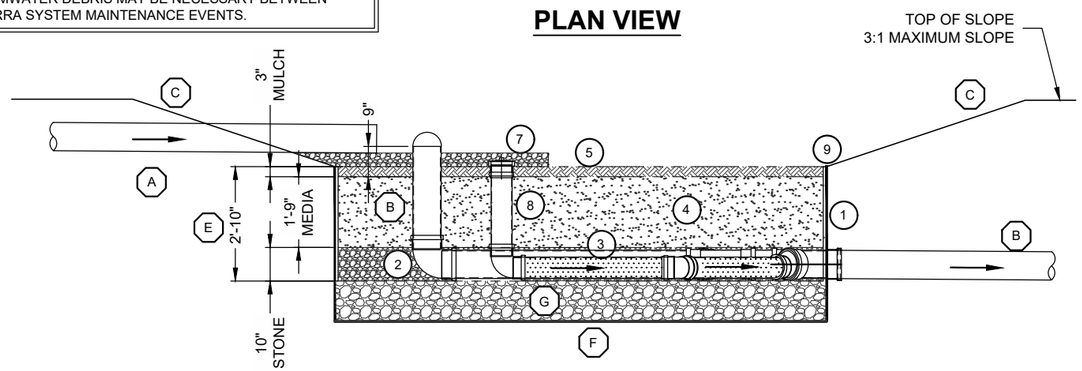
$$\boldsymbol{Q_{pump} = 470\ gpm}$$

THIS IS A SCHEMATIC LAYOUT ONLY. ACTUAL CONFIGURATION WILL VARY BASED ON THE SITE SPECIFIC CONSIDERATIONS. REFER TO FLOWKIT DRAWINGS FOR ADDITIONAL DETAILS.



AS WITH ALL OPEN TOP BIORETENTION SYSTEMS, FILTERRA BIOSCAPE SYSTEM IS OPEN TO THE ATMOSPHERE WITH A MEDIA SURFACE RECESSED BELOW FINISHED GRADE. CONTRACTOR OR OWNER IS RESPONSIBLE FOR PROVIDING ANY REQUIRED SAFETY MEASURES AROUND SYSTEM PERIMETER. TO MAINTAIN AESTHETICS, REMOVAL OF HEAVY STORMWATER DEBRIS MAY BE NECESSARY BETWEEN REGULAR FILTERRA SYSTEM MAINTENANCE EVENTS.

PLAN VIEW



SECTION A-A VIEW

BILL OF MATERIALS

COUNT	DESCRIPTION	INSTALLED BY
X	FILTERRA SURFACE AREA (SF)	CONTRACTOR
X	MULCH VOLUME (CY)	CONTRACTOR
XX	FILTERRA MEDIA VOLUME (CY)	CONTRACTOR
X	1/2" #4 ROUND AGGREGATE UNDERDRAIN STONE (CY)	CONTRACTOR
X	ENERGY DISSIPATION ROCK (CY)	CONTRACTOR
X	EROSION CONTROL (LF)	CONTRACTOR
X	FILTERRA FLOWKIT	CONTRACTOR

PLANTING SCHEDULE

*NOTE: PLANTS PROVIDED BY OTHERS

QUANTITY	FILTERRA BIOSCAPE SYSTEM PLANT PALETTE

GENERAL NOTES

1. CONTRACTOR SHALL CONTACT CONTECH TO COORDINATE DELIVERY AND SUPERVISION OF PLACEMENT OF FILTERRA BIOSCAPE SYSTEM COMPONENTS (ACTIVATION). CONTRACTOR SHALL COMPLETE ITEMS IN THE LIST OF CONTRACTOR INSTALLATION RESPONSIBILITIES LISTED ON THIS DETAIL BEFORE CONTECH'S REPRESENTATIVE ATTENDS AND SUPERVISES THE ACTIVATION OF THE BIOSCAPE SYSTEM.
2. PERFORM FILTERRA BIOSCAPE SYSTEM EXCAVATION ONLY AFTER ALL THE CONTRIBUTING DRAINAGE AREAS ARE PERMANENTLY STABILIZED. DO NOT CONSTRUCT FILTERRA BIOSCAPE SYSTEM IN AN AREA USED AS EROSION AND SEDIMENT CONTROL FACILITIES. DO NOT STOCKPILE MATERIALS NOR STORE EQUIPMENT IN THIS AREA.
3. USE METHODS OF EXCAVATION THAT MINIMIZE COMPACTION OF THE UNDERLYING SOIL UNLESS THE SYSTEM IS TO BE LINED.
4. CONTRACTOR SHALL COORDINATE WITH CONTECH BEFORE THE FILTERRA BIOSCAPE SYSTEM AREA IS EXCAVATED TO MINIMIZE TIME BETWEEN EXCAVATION AND DELIVERY AND ACTIVATION OF THE FILTERRA BIOSCAPE SYSTEM. ANY STANDING WATER THAT ACCUMULATES IN THE EXCAVATED AREA MUST BE REMOVED BY THE CONTRACTOR BEFORE CONTECH CAN PROVIDE ACTIVATION OF THE FILTERRA BIOSCAPE SYSTEM. ANY ADDITIONAL EXCAVATION WILL BE THE RESPONSIBILITY OF THE CONTRACTOR. EXCAVATION DIMENSIONS SHOULD BE PROVIDED TO CONTECH IN THE ACTIVATION REQUEST CHECKLIST.
5. CONTRACTOR SHALL PROVIDE ACCESS TO THE EXCAVATED AREA(S) FOR USE DURING THE ACTIVATION OF THE FILTERRA BIOSCAPE SYSTEM(S). ACCESS SHALL NOT PROHIBIT LIGHT DUTY EQUIPMENT THAT MAY BE USED TO INSTALL THE COMPONENTS (STONE, MEDIA, ETC). THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY RE-STABILIZATION THAT MAY BE REQUIRED AFTER THE FILTERRA BIOSCAPE SYSTEM ACTIVATION.
6. CONTECH AND/OR ITS REPRESENTATIVES MUST BE SCHEDULED TO BE ON SITE FOR THE LIST ENTITLED CONTRACTOR ACTIVATION RESPONSIBILITIES.

CONTRACTOR SITE PREPARATION RESPONSIBILITIES AS DENOTED BY (X) ON THIS DETAIL:

- (A.) CONTRACTOR SHALL INSTALL PIPE OR SWALE THAT CONVEYS INFLUENT FLOWS AS WELL AS ANY REQUIRED INLET AND OUTLET STRUCTURES.
- (B.) CONTRACTOR SHALL PROVIDE BYPASS PIPE AND RISER OR OTHER STRUCTURE AS SHOWN ON PLANS. THE BYPASS PIPE SHALL BE INSTALLED WITH WYE(S), OR OTHER PIPE FITTINGS, AND WITH REDUCER COUPLING(S) FOR CONNECTION OF UNDERDRAIN PIPE, PER PLANS. PIPES SHALL BE INSTALLED TO PROMOTE POSITIVE FLOW FROM THE FILTERRA BIOSCAPE SYSTEM.
- (C.) IF REQUIRED, CONTRACTOR TO PROVIDE SHOULDER ACCORDING TO DIMENSION AND SLOPE SHOWN ON PLANS OR AS DESIGNED BY ENGINEER OF RECORD. SLOPE FROM SHOULDER TO FILTERRA BIOSCAPE SYSTEM SURFACE AREA SHALL NOT EXCEED 3:1. SOD IS REQUIRED TO STABILIZE SIDE SLOPES OR ADJACENT GRADE.
- (D.) CONTRACTOR TO EXCAVATE MEDIA AREA CORRESPONDING TO THE SIZE OF THE FILTERRA BIOSCAPE SYSTEM SURFACE AREA AS SHOWN ON DETAIL AND ON PLAN SHEETS.
- (E.) CONTRACTOR SHALL EXCAVATE VERTICALLY FROM BOTTOM OF UNDERDRAIN STONE, OR DRAINAGE STONE, IF REQUIRED, TO ELEVATION OF MULCH AS SHOWN ON THIS DETAIL .
- (F.) CONTRACTOR TO PROVIDE AND INSTALL ANY GEOTEXTILE OR IMPERMEABLE LINER FOR BOTTOM OF THE FILTERRA BIOSCAPE SYSTEM IF REQUIRED PER THE PLANS.
- (G.) CONTRACTOR TO PROVIDE AND INSTALL ANY ADDITIONAL DRAINAGE STONE BELOW THE FILTERRA BIOSCAPE SYSTEM AS CALLED OUT ON THE PLANS.

CONTRACTOR ACTIVATION RESPONSIBILITIES AS DENOTED BY (#) ON THIS DETAIL:

1. PLACE GEOTEXTILE FABRIC ALONG THE PERIMETER OF THE FILTERRA BIOSCAPE SYSTEM EXCAVATION.
2. PLACE 10" OF UNDERDRAIN STONE - 2" UNDER THE PIPING, 6" AROUND THE PIPING AND 2" ABOVE THE PIPING USING LIGHT DUTY EQUIPMENT ONLY.
3. PLACE 6" UNDERDRAIN PIPING UNLESS OTHERWISE APPROVED BY CONTECH, ASSOCIATED PIPING AND FITTINGS/ELBOWS TO CONNECT TO THE PIPING/FITTING(S) THAT IS PROVIDED BY CONTRACTOR (SEE CONTRACTOR INSTALLATION RESPONSIBILITIES THIS DETAIL).
4. PLACE 21" FILTERRA MEDIA USING LIGHT DUTY EQUIPMENT ONLY. DO NOT COMPACT MEDIA.
5. PLACE 3" DOUBLE SHREDDED HARDWOOD MULCH OVER ENTIRE FILTERRA BIOSCAPE SYSTEM SURFACE AREA USING LIGHT DUTY EQUIPMENT ONLY. DO NOT COMPACT MULCH.
6. PROVIDE AND PLANT VEGETATION AS INDICATED IN TABLE ON THIS DETAIL OR ON SITE PLANS.
7. PLACE ENERGY DISSIPATION ROCK APRON AS DESIGNED AND INDICATED ON THIS DETAIL OR PER ENGINEER OF RECORD PLANS.
8. PLACE CLEANOUT ADAPTER, PLUG AND PIPING.
9. PLACE ADDITIONAL EROSION CONTROL AROUND FILTERRA BIOSCAPE SYSTEM (IF REQUIRED).

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

FILTERRA BIOSCAPE™ SYSTEM STANDARD DETAIL

Santa Ana Watershed - BMP Design Flow Rate, Q_{BMP}

(Rev. 10-2011)

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name: Albert A. Webb Associates

Date: 8/5/2021

Designed by: TSW

Case No: PP2019-005

Company Project Number/Name: Menifee Commerce Center

BMP Identification

BMP NAME / ID: C-D-1

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

Design Rainfall Intensity: I = 0.20 in/hr

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

	DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type (use pull-down menu)	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Rainfall Intensity (in/hr)*	*Design Flow Rate (cfs)*	*Proposed Flow Rate (cfs)*
DMAs	*C-D-1*	*27,160*	*Concrete or Asphalt*	*1*	*0.89*	*24226.7*			
		27160	**Total**			**24226.7**	**0.20**	**0.1**	**0.1**

Notes:

Santa Ana Watershed - BMP Design Flow Rate, Q_{BMP}

(Rev. 10-2011)

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name	Albert A. Webb Associates	Date	8/5/2021
Designed by	TSW	Case No	PP2019-005
Company Project Number/Name	Menifee Commerce Center		

BMP Identification

BMP NAME / ID: C-D-2

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

Design Rainfall Intensity I = 0.20 in/hr

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMAs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type (use pull-down menu)	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Rainfall Intensity (in/hr)*	*Design Flow Rate (cfs)*	*Proposed Flow Rate (cfs)*
C-D-2	*72,240*	*Concrete or Asphalt*	*1*	*0.89*	*64438.1*			
	72240		***Total***		**64438.1**	**0.20**	***0.3***	***0.3***

Notes:

Santa Ana Watershed - BMP Design Flow Rate, Q_{BMP}

(Rev. 10-2011)

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name	Albert A. Webb Associates	Date	8/5/2021
Designed by	TSW	Case No	PP2019-005
Company Project Number/Name	Menifee Commerce Center		

BMP Identification

BMP NAME / ID: C-D-3

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

Design Rainfall Intensity I = 0.20 in/hr

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMAs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type (use pull-down menu)	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Rainfall Intensity (in/hr)*	*Design Flow Rate (cfs)*	*Proposed Flow Rate (cfs)*
C-D-3	*22,850*	*Concrete or Asphalt*	*1*	*0.89*	*20382.2*			
	22850		***Total***		**20382.2**	**0.20**	***0.1***	***0.1***

Notes:

Santa Ana Watershed - BMP Design Flow Rate, Q_{BMP}

(Rev. 10-2011)

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name: Albert A. Webb Associates | Date: 8/5/2021

Designed by: TSW | Case No: PP2019-005

Company Project Number/Name: Menifee Commerce Center

BMP Identification

BMP NAME / ID: C-S-1

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

Design Rainfall Intensity: I = 0.20 in/hr

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

	DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type (use pull-down menu)	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	Design Rainfall Intensity (in/hr)	Design Flow Rate (cfs)	Proposed Flow Rate (cfs)
DMAs	C-S-1	85,330	Concrete or Asphalt	1	0.89	76114.4			
		85330	Total			76114.4	0.20	0.3	0.3

Notes:

Santa Ana Watershed - BMP Design Flow Rate, Q_{BMP}

(Rev. 10-2011)

Legend: Required Entries | Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name: Albert A. Webb Associates — Date: 8/5/2021

Designed by: TSW — Case No: PP2019-005

Company Project Number/Name: Menifee Commerce Center

BMP Identification

BMP NAME / ID: C-S-2

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

Design Rainfall Intensity — I = 0.20 in/hr

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

	DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type (use pull-down menu)	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Rainfall Intensity (in/hr)*	*Design Flow Rate (cfs)*	*Proposed Flow Rate (cfs)*
DMAs	*C-S-2*	*106,860*	*Concrete or Asphalt*	*1*	*0.89*	*95319.1*			
		106860	***Total***			**95319.1**	**0.20**	***0.4***	***0.4***

Notes:

Santa Ana Watershed - BMP Design Flow Rate, Q_{BMP}

(Rev. 10-2011)

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name: Albert A. Webb Associates
Date: 8/5/2021
Designed by: TSW
Case No: PP2019-005
Company Project Number/Name: Menifee Commerce Center

BMP Identification

BMP NAME / ID: C-T

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

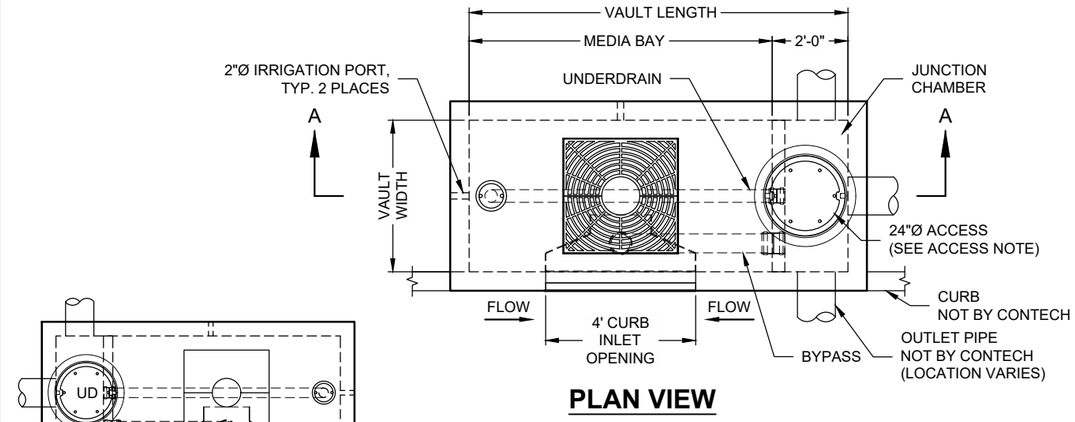
Design Rainfall Intensity: I = 0.20 in/hr

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

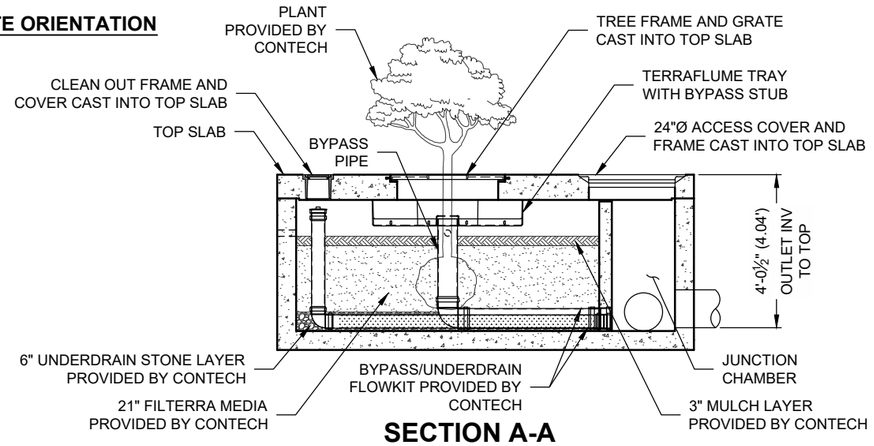
	DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type (use pull-down menu)	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Rainfall Intensity (in/hr)*	*Design Flow Rate (cfs)*	*Proposed Flow Rate (cfs)*
DMAs	*C-T*	*59,400*	*Concrete or Asphalt*	*1*	*0.89*	*52984.8*			
		59400	***Total***			**52984.8**	**0.20**	***0.2***	***0.2***

Notes:



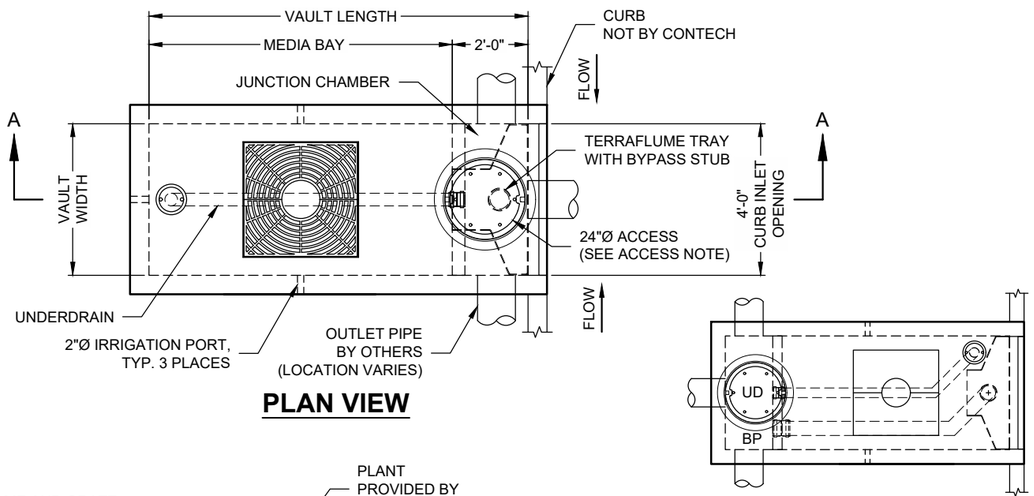
PLAN VIEW

ALTERNATE ORIENTATION



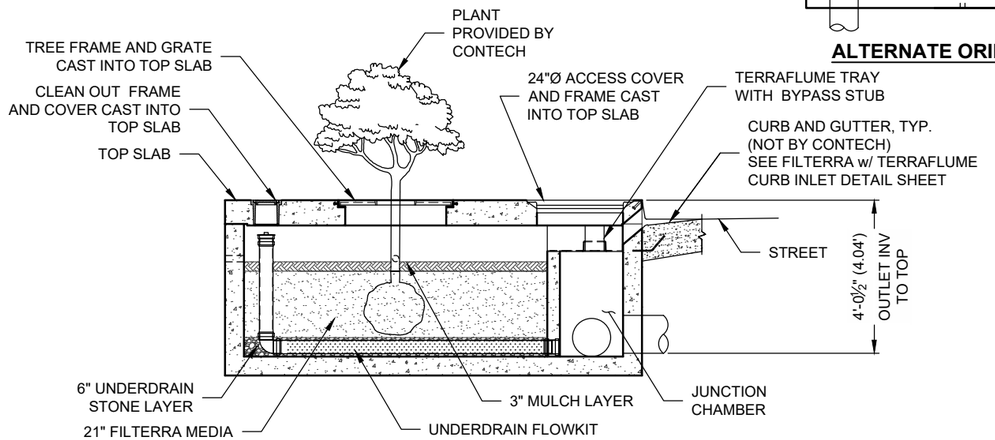
SECTION A-A

ACCESS NOTE:
JUNCTION CHAMBER TOP SLAB ACCESS WILL BE 12"Ø FOR FTIBC0404-CSS AND FTIBC0404-CLS DUE TO STRUCTURAL CONSIDERATIONS



PLAN VIEW

ALTERNATE ORIENTATION



SECTION A-A

FTIBC-C LONG SIDE CURB INLET

DESIGNATION (LONG SIDE)	AVAILABILITY	MEDIA BAY SIZE	VAULT SIZE (L x W)	MAX. BYPASS PIPE DIA	MAX. BYPASS FLOW (CFS)	UNDERDRAIN PIPE DIA. (PERF.)	TREE GRATE QTY. & SIZE
FTIBC0404LS-C	N/A CA	4 x 4	6 x 4	6" SDR 35	1.42	4" SDR 35	(1) 3' x 3'
FTIBC04504-C	CA ONLY	4.5 x 4	6.5 x 4	8"SDR 35	1.89	4" SDR 35	(1) 3' x 3'
FTIBC058045-C	MID-ATL ONLY	5.83 x 4.5	7.83 x 4.5	8" SDR 35	1.89	4" SDR 35	(1) 3' x 3'
FTIBC0604-C	N/A MID-ATL	6 x 4	8 x 4	8" SDR 35	1.89	4" SDR 35	(1) 3' x 3'
FTIBC0606LS-C	ALL	6 x 6	8 x 6	10" SDR 35	2.37	4" SDR 35	(1) 3' x 3'
FTIBC0806-C	ALL	8 x 6	10 x 6	10" SDR 35	2.37	4" SDR 35	(1) 4' x 4'
FTIBC1006-C	ALL	10 x 6	12 x 6	10" SDR 35	2.37	6" SDR 35	(1) 4' x 4'
FTIBC1107-C	ALL	11 x 7	13 x 7	10" SDR 35	2.37	6" SDR 35	(1) 4' x 4'
FTIBC1208-C*	CALL CONTECH	12 x 8	14 x 8	(2) 10" SDR 35	4.74	6" SDR 35	(2) 4' x 4'
FTIBC1408-C*	CALL CONTECH	14 x 8	16 x 8	(2) 10" SDR 35	4.74	6" SDR 35	(2) 4' x 4'
FTIBC1608-C*	CALL CONTECH	16 x 8	18 x 8	(2) 10" SDR 35	4.74	6" SDR 35	(2) 4' x 4'
FTIBC1808-C*	CALL CONTECH	18 x 8	20 x 8	(2) 10" SDR 35	4.74	6" SDR 35	(3) 4' x 4'
FTIBC2008-C*	CALL CONTECH	20 x 8	22 x 8	(2) 10" SDR 35	4.74	6" SDR 35	(3) 4' x 4'
FTIBC2208-C*	CALL CONTECH	22 x 8	24 x 8	(2) 10" SDR 35	4.74	6" SDR 35	(3) 4' x 4'

N/A = NOT AVAILABLE
*REQUIRES (2) TERRAFLUMES

FTIBC-C SHORT SIDE CURB INLET

DESIGNATION (SHORT SIDE)	AVAILABILITY	MEDIA BAY SIZE	VAULT SIZE (W x L)	MAX. BYPASS PIPE DIA	MAX. BYPASS FLOW (CFS)	UNDERDRAIN PIPE DIA. (PERF.)	TREE GRATE QTY. & SIZE
FTIBC0404SS-C	N/A CA	4 x 4	4 x 6	6" SDR 35	1.42	4" SDR 35	(1) 3' x 3'
FTIBC04045-C	CA ONLY	4 x 4.5	4 x 6.5	8" SDR 35	1.89	4" SDR 35	(1) 3' x 3'
FTIBC0406-C	N/A MID-ATL	4 x 6	4 x 8	8" SDR 35	1.89	4" SDR 35	(1) 3' x 3'
FTIBC045058-C	MID-ATL	4.5 x 5.83	4.5 x 7.83	8" SDR 35	1.89	4" SDR 35	(1) 3' x 3'
FTIBC0606SS-C	ALL	6 x 6	6 x 8	10" SDR 35	2.37	4" SDR 35	(1) 3' x 3'
FTIBC0608-C	ALL	6 x 8	6 x 10	10" SDR 35	2.37	4" SDR 35	(1) 4' x 4'
FTIBC0610-C	ALL	6 x 10	6 x 12	10" SDR 35	2.37	6" SDR 35	(1) 4' x 4'
FTIBC0711-C	ALL	7 x 11	7 x 13	10" SDR 35	2.37	6" SDR 35	(1) 4' x 4'
FTIBC0812-C	CALL CONTECH	8 x 12	8 x 14	(2) 10" SDR 35	4.74	6" SDR 35	(2) 4' x 4'

N/A = NOT AVAILABLE

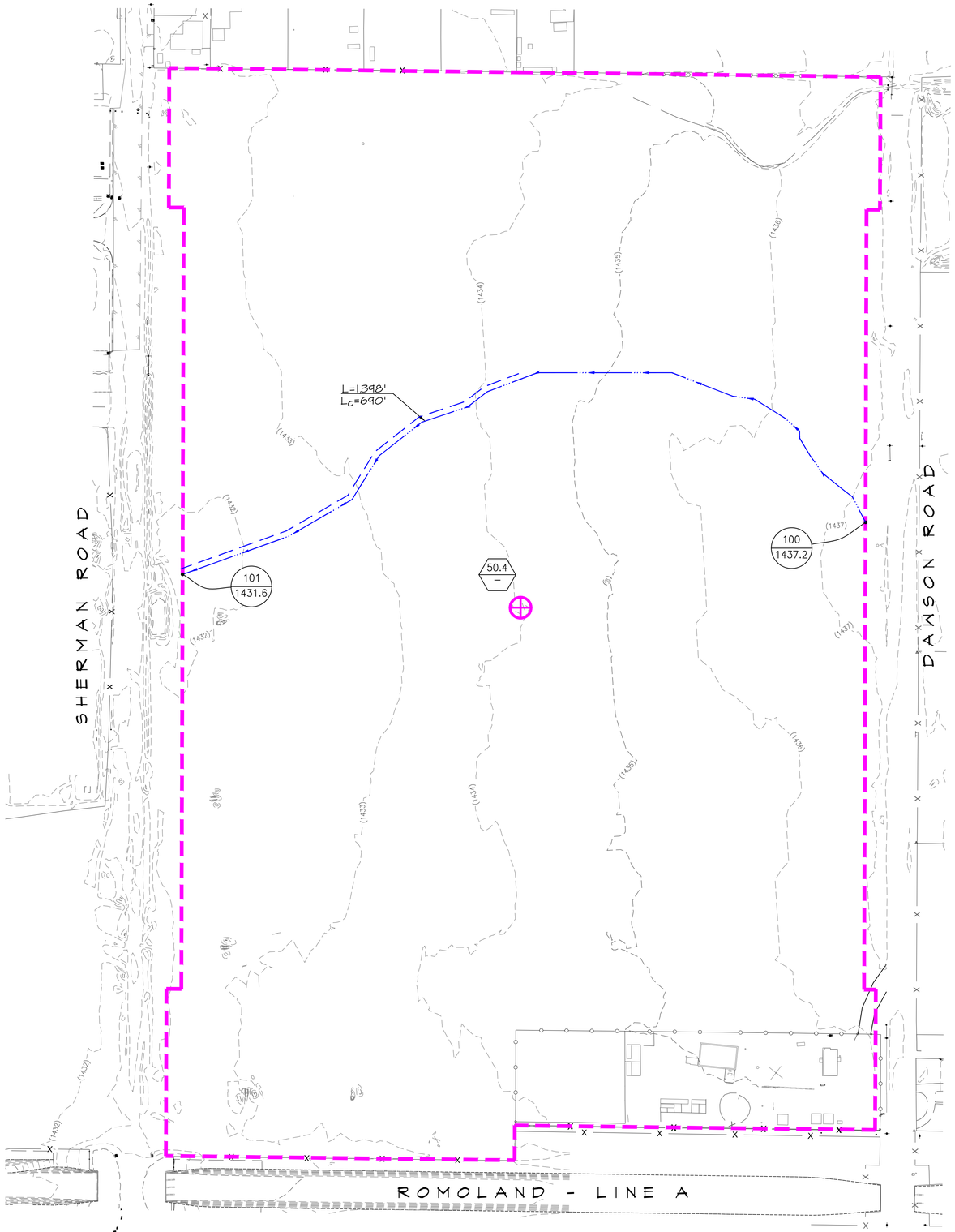
INTERNAL PIPE CONFIGURATION MAY VARY DEPENDING ON VAULT SIZE

CONTECH
ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

FILTERRA INTERNAL BYPASS CURB WITH CHAMBER (FTIBC-C) CONFIGURATION DETAIL

Appendix 7: Hydromodification

Supporting Detail Relating to Hydrologic Conditions of Concern



LEGEND

- DRAINAGE MANAGEMENT BOUNDARY
- FLOW DIRECTION
- L=14XX' / L_C=1000' — LONGEST FLOW PATH CENTROIDAL LENGTH
- 101 / 14xx — NODE DESIGNATION NODE ELEVATION
- 5.0 / – — WATERSHED AREA (ACRES)
- CENTROID

N W E S

1" = 100'

100 0 100 200 300

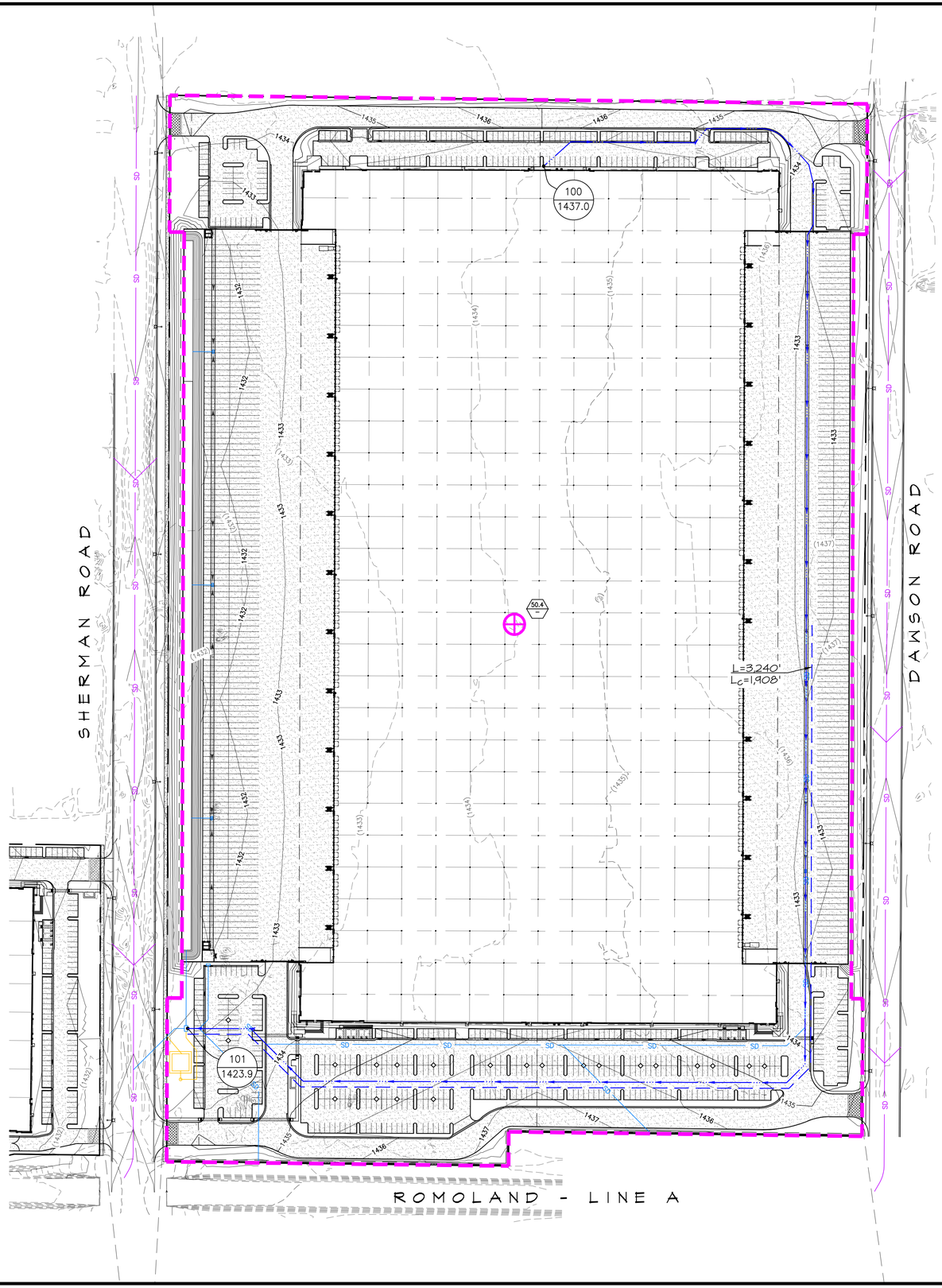
PRELIMINARY

CITY OF MENIFEE

UNIT HYDROGRAPH EXISTING CONDITION MENIFEE COMMERCE CENTER BUILDING 1

SCALE: 1"=100'	ALBERT A. WEBB ASSOCIATES	W.O. 21-0026
DATE: MAY 2021	ENGINEERING CONSULTANTS 3788 McCRAY STREET RIVERSIDE CA. 92506 PH. (951) 686-1070 FAX (951) 788-1256	SHEET 1
DESIGNED:		OF 4 SHEETS
CHECKED:		
PLN CK REF:		DWG. NO.
F.B.		

H:\2021\21-0026\DRAINAGE\HYDROLOGY\DWG FOLDER\21-0026-PHYD-UH.DWG 5/5/2021 12:19:55 AM



LEGEND

- DRAINAGE MANAGEMENT BOUNDARY
- FLOW DIRECTION
- L=14XX' / Lc=1000' — LONGEST FLOW PATH / CENTROIDAL LENGTH
- 101 / 14xx — NODE DESIGNATION / NODE ELEVATION
- 5.0 — WATERSHED AREA (ACRES)
- CENTROID

N W E S

1" = 100'

100 0 100 200 300

PRELIMINARY

CITY OF MENIFEE

UNIT HYDROGRAPH
DEVELOPED CONDITION
MENIFEE COMMERCE CENTER
BUILDING 1

SCALE: 1"=100'	ALBERT A. WEBB ASSOCIATES	W.O. 21-0026
DATE: MAY 2021	ENGINEERING CONSULTANTS 3788 McCRAY STREET RIVERSIDE, CA. 92506 PH. (951) 686-1070 FAX (951) 788-1256	SHEET 2 OF 4 SHEETS
DESIGNED:		
CHECKED:		
PLN CK REF:		DWG. NO.
F.B.		

H:\2021\21-0026\DRAINAGE\HYDROLOGY\DWG FOLDER\21-0026-PHYD-UH.DWG 5/5/2021 12:19:55 AM

U n i t H y d r o g r a p h A n a l y s i s

Study date 05/03/21 File: ONSITEPRE242.out

++

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 4010

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

21-0026 - MENIFEE COMMERCE CENTER
ONSITE UNIT HYDROGRAPH ANALYSIS
EXISITNG CONDITION, 2-YEAR 24-HOUR: BUILDING 1
FN: ONSITEPRE242.OUT- TSW

Drainage Area = 50.40(Ac.) = 0.079 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 50.40(Ac.) = 0.079 Sq. Mi.
Length along longest watercourse = 1398.00(Ft.)
Length along longest watercourse measured to centroid = 690.00(Ft.)
Length along longest watercourse = 0.265 Mi.
Length along longest watercourse measured to centroid = 0.131 Mi.
Difference in elevation = 5.60(Ft.)
Slope along watercourse = 21.1502 Ft./Mi.
Average Manning's 'N' = 0.030
Lag time = 0.112 Hr.
Lag time = 6.74 Min.
25% of lag time = 1.68 Min.
40% of lag time = 2.70 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
50.40	2.04	102.82

100 YEAR Area rainfall data:

```
Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       50.40            5.33                 268.63

STORM EVENT (YEAR) =    2.00
Area Averaged 2-Year Rainfall =    2.040(In)
Area Averaged 100-Year Rainfall =    5.330(In)

Point rain (area averaged) =    2.040(In)
Areal adjustment factor =   99.99 %
Adjusted average point rain =    2.040(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
    50.400           86.00         0.000
 Total Area Entered =     50.40(Ac.)


RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
AMC2 AMC-1     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
86.0  71.6      0.343     0.000        0.343       1.000      0.343
                                                 Sum (F) =   0.343
Area averaged mean soil loss (F) (In/Hr) =  0.200
Minimum soil loss rate ((In/Hr)) =  0.100
(for 24 hour storm duration)
Note: User entry of the fm value
Note: User entry of the f value
Soil low loss rate (decimal) =   0.900
------------------------------------------------------------------------

               U n i t  H y d r o g r a p h
                      VALLEY S-Curve
------------------------------------------------------------------------
               Unit Hydrograph Data
------------------------------------------------------------------------
Unit time period   Time % of lag   Distribution   Unit Hydrograph
    (hrs)                          Graph %            (CFS)
------------------------------------------------------------------------
    1   0.083         74.207         11.722              5.954
    2   0.167        148.413         42.134             21.402
    3   0.250        222.620         21.730             11.037
    4   0.333        296.826          8.657              4.397
    5   0.417        371.033          5.244              2.664
    6   0.500        445.240          3.405              1.730
    7   0.583        519.446          2.357              1.197
    8   0.667        593.653          1.743              0.885
    9   0.750        667.859          1.228              0.624
   10   0.833        742.066          0.829              0.421
   11   0.917        816.272          0.950              0.483
                               Sum = 100.000   Sum=      50.794
------------------------------------------------------------------------

 The following loss rate calculations reflect use of the minimum calculated loss
 rate subtracted from the Storm Rain to produce the maximum Effective Rain value
```

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.016	(0.355)	0.015	0.002
2	0.17	0.07	0.016	(0.353)	0.015	0.002
3	0.25	0.07	0.016	(0.352)	0.015	0.002
4	0.33	0.10	0.024	(0.350)	0.022	0.002
5	0.42	0.10	0.024	(0.349)	0.022	0.002
6	0.50	0.10	0.024	(0.348)	0.022	0.002
7	0.58	0.10	0.024	(0.346)	0.022	0.002
8	0.67	0.10	0.024	(0.345)	0.022	0.002
9	0.75	0.10	0.024	(0.344)	0.022	0.002
10	0.83	0.13	0.033	(0.342)	0.029	0.003
11	0.92	0.13	0.033	(0.341)	0.029	0.003
12	1.00	0.13	0.033	(0.340)	0.029	0.003
13	1.08	0.10	0.024	(0.338)	0.022	0.002
14	1.17	0.10	0.024	(0.337)	0.022	0.002
15	1.25	0.10	0.024	(0.336)	0.022	0.002
16	1.33	0.10	0.024	(0.334)	0.022	0.002
17	1.42	0.10	0.024	(0.333)	0.022	0.002
18	1.50	0.10	0.024	(0.332)	0.022	0.002
19	1.58	0.10	0.024	(0.330)	0.022	0.002
20	1.67	0.10	0.024	(0.329)	0.022	0.002
21	1.75	0.10	0.024	(0.328)	0.022	0.002
22	1.83	0.13	0.033	(0.326)	0.029	0.003
23	1.92	0.13	0.033	(0.325)	0.029	0.003
24	2.00	0.13	0.033	(0.324)	0.029	0.003
25	2.08	0.13	0.033	(0.322)	0.029	0.003
26	2.17	0.13	0.033	(0.321)	0.029	0.003
27	2.25	0.13	0.033	(0.320)	0.029	0.003
28	2.33	0.13	0.033	(0.318)	0.029	0.003
29	2.42	0.13	0.033	(0.317)	0.029	0.003
30	2.50	0.13	0.033	(0.316)	0.029	0.003
31	2.58	0.17	0.041	(0.315)	0.037	0.004
32	2.67	0.17	0.041	(0.313)	0.037	0.004
33	2.75	0.17	0.041	(0.312)	0.037	0.004
34	2.83	0.17	0.041	(0.311)	0.037	0.004
35	2.92	0.17	0.041	(0.309)	0.037	0.004
36	3.00	0.17	0.041	(0.308)	0.037	0.004
37	3.08	0.17	0.041	(0.307)	0.037	0.004
38	3.17	0.17	0.041	(0.306)	0.037	0.004
39	3.25	0.17	0.041	(0.304)	0.037	0.004
40	3.33	0.17	0.041	(0.303)	0.037	0.004
41	3.42	0.17	0.041	(0.302)	0.037	0.004
42	3.50	0.17	0.041	(0.301)	0.037	0.004
43	3.58	0.17	0.041	(0.299)	0.037	0.004
44	3.67	0.17	0.041	(0.298)	0.037	0.004
45	3.75	0.17	0.041	(0.297)	0.037	0.004
46	3.83	0.20	0.049	(0.296)	0.044	0.005
47	3.92	0.20	0.049	(0.294)	0.044	0.005
48	4.00	0.20	0.049	(0.293)	0.044	0.005
49	4.08	0.20	0.049	(0.292)	0.044	0.005
50	4.17	0.20	0.049	(0.291)	0.044	0.005
51	4.25	0.20	0.049	(0.289)	0.044	0.005
52	4.33	0.23	0.057	(0.288)	0.051	0.006
53	4.42	0.23	0.057	(0.287)	0.051	0.006
54	4.50	0.23	0.057	(0.286)	0.051	0.006

55	4.58	0.23	0.057	(0.284)	0.051	0.006
56	4.67	0.23	0.057	(0.283)	0.051	0.006
57	4.75	0.23	0.057	(0.282)	0.051	0.006
58	4.83	0.27	0.065	(0.281)	0.059	0.007
59	4.92	0.27	0.065	(0.280)	0.059	0.007
60	5.00	0.27	0.065	(0.278)	0.059	0.007
61	5.08	0.20	0.049	(0.277)	0.044	0.005
62	5.17	0.20	0.049	(0.276)	0.044	0.005
63	5.25	0.20	0.049	(0.275)	0.044	0.005
64	5.33	0.23	0.057	(0.273)	0.051	0.006
65	5.42	0.23	0.057	(0.272)	0.051	0.006
66	5.50	0.23	0.057	(0.271)	0.051	0.006
67	5.58	0.27	0.065	(0.270)	0.059	0.007
68	5.67	0.27	0.065	(0.269)	0.059	0.007
69	5.75	0.27	0.065	(0.268)	0.059	0.007
70	5.83	0.27	0.065	(0.266)	0.059	0.007
71	5.92	0.27	0.065	(0.265)	0.059	0.007
72	6.00	0.27	0.065	(0.264)	0.059	0.007
73	6.08	0.30	0.073	(0.263)	0.066	0.007
74	6.17	0.30	0.073	(0.262)	0.066	0.007
75	6.25	0.30	0.073	(0.260)	0.066	0.007
76	6.33	0.30	0.073	(0.259)	0.066	0.007
77	6.42	0.30	0.073	(0.258)	0.066	0.007
78	6.50	0.30	0.073	(0.257)	0.066	0.007
79	6.58	0.33	0.082	(0.256)	0.073	0.008
80	6.67	0.33	0.082	(0.255)	0.073	0.008
81	6.75	0.33	0.082	(0.254)	0.073	0.008
82	6.83	0.33	0.082	(0.252)	0.073	0.008
83	6.92	0.33	0.082	(0.251)	0.073	0.008
84	7.00	0.33	0.082	(0.250)	0.073	0.008
85	7.08	0.33	0.082	(0.249)	0.073	0.008
86	7.17	0.33	0.082	(0.248)	0.073	0.008
87	7.25	0.33	0.082	(0.247)	0.073	0.008
88	7.33	0.37	0.090	(0.246)	0.081	0.009
89	7.42	0.37	0.090	(0.244)	0.081	0.009
90	7.50	0.37	0.090	(0.243)	0.081	0.009
91	7.58	0.40	0.098	(0.242)	0.088	0.010
92	7.67	0.40	0.098	(0.241)	0.088	0.010
93	7.75	0.40	0.098	(0.240)	0.088	0.010
94	7.83	0.43	0.106	(0.239)	0.095	0.011
95	7.92	0.43	0.106	(0.238)	0.095	0.011
96	8.00	0.43	0.106	(0.237)	0.095	0.011
97	8.08	0.50	0.122	(0.236)	0.110	0.012
98	8.17	0.50	0.122	(0.234)	0.110	0.012
99	8.25	0.50	0.122	(0.233)	0.110	0.012
100	8.33	0.50	0.122	(0.232)	0.110	0.012
101	8.42	0.50	0.122	(0.231)	0.110	0.012
102	8.50	0.50	0.122	(0.230)	0.110	0.012
103	8.58	0.53	0.131	(0.229)	0.117	0.013
104	8.67	0.53	0.131	(0.228)	0.117	0.013
105	8.75	0.53	0.131	(0.227)	0.117	0.013
106	8.83	0.57	0.139	(0.226)	0.125	0.014
107	8.92	0.57	0.139	(0.225)	0.125	0.014
108	9.00	0.57	0.139	(0.224)	0.125	0.014
109	9.08	0.63	0.155	(0.223)	0.140	0.016
110	9.17	0.63	0.155	(0.222)	0.140	0.016

111	9.25	0.63	0.155	(0.221)	0.140	0.016
112	9.33	0.67	0.163	(0.219)	0.147	0.016
113	9.42	0.67	0.163	(0.218)	0.147	0.016
114	9.50	0.67	0.163	(0.217)	0.147	0.016
115	9.58	0.70	0.171	(0.216)	0.154	0.017
116	9.67	0.70	0.171	(0.215)	0.154	0.017
117	9.75	0.70	0.171	(0.214)	0.154	0.017
118	9.83	0.73	0.180	(0.213)	0.162	0.018
119	9.92	0.73	0.180	(0.212)	0.162	0.018
120	10.00	0.73	0.180	(0.211)	0.162	0.018
121	10.08	0.50	0.122	(0.210)	0.110	0.012
122	10.17	0.50	0.122	(0.209)	0.110	0.012
123	10.25	0.50	0.122	(0.208)	0.110	0.012
124	10.33	0.50	0.122	(0.207)	0.110	0.012
125	10.42	0.50	0.122	(0.206)	0.110	0.012
126	10.50	0.50	0.122	(0.205)	0.110	0.012
127	10.58	0.67	0.163	(0.204)	0.147	0.016
128	10.67	0.67	0.163	(0.203)	0.147	0.016
129	10.75	0.67	0.163	(0.202)	0.147	0.016
130	10.83	0.67	0.163	(0.201)	0.147	0.016
131	10.92	0.67	0.163	(0.200)	0.147	0.016
132	11.00	0.67	0.163	(0.199)	0.147	0.016
133	11.08	0.63	0.155	(0.198)	0.140	0.016
134	11.17	0.63	0.155	(0.197)	0.140	0.016
135	11.25	0.63	0.155	(0.196)	0.140	0.016
136	11.33	0.63	0.155	(0.195)	0.140	0.016
137	11.42	0.63	0.155	(0.194)	0.140	0.016
138	11.50	0.63	0.155	(0.193)	0.140	0.016
139	11.58	0.57	0.139	(0.192)	0.125	0.014
140	11.67	0.57	0.139	(0.191)	0.125	0.014
141	11.75	0.57	0.139	(0.190)	0.125	0.014
142	11.83	0.60	0.147	(0.190)	0.132	0.015
143	11.92	0.60	0.147	(0.189)	0.132	0.015
144	12.00	0.60	0.147	(0.188)	0.132	0.015
145	12.08	0.83	0.204	(0.187)	0.184	0.020
146	12.17	0.83	0.204	(0.186)	0.184	0.020
147	12.25	0.83	0.204	(0.185)	0.184	0.020
148	12.33	0.87	0.212	0.184	(0.191)	0.028
149	12.42	0.87	0.212	0.183	(0.191)	0.029
150	12.50	0.87	0.212	0.182	(0.191)	0.030
151	12.58	0.93	0.228	0.181	(0.206)	0.047
152	12.67	0.93	0.228	0.180	(0.206)	0.048
153	12.75	0.93	0.228	0.179	(0.206)	0.049
154	12.83	0.97	0.237	0.178	(0.213)	0.058
155	12.92	0.97	0.237	0.178	(0.213)	0.059
156	13.00	0.97	0.237	0.177	(0.213)	0.060
157	13.08	1.13	0.277	0.176	(0.250)	0.102
158	13.17	1.13	0.277	0.175	(0.250)	0.103
159	13.25	1.13	0.277	0.174	(0.250)	0.103
160	13.33	1.13	0.277	0.173	(0.250)	0.104
161	13.42	1.13	0.277	0.172	(0.250)	0.105
162	13.50	1.13	0.277	0.171	(0.250)	0.106
163	13.58	0.77	0.188	(0.170)	0.169	0.019
164	13.67	0.77	0.188	(0.170)	0.169	0.019
165	13.75	0.77	0.188	0.169	(0.169)	0.019
166	13.83	0.77	0.188	0.168	(0.169)	0.020

167	13.92	0.77	0.188	0.167	(0.169)	0.021
168	14.00	0.77	0.188	0.166	(0.169)	0.022
169	14.08	0.90	0.220	0.165	(0.198)	0.055
170	14.17	0.90	0.220	0.164	(0.198)	0.056
171	14.25	0.90	0.220	0.164	(0.198)	0.057
172	14.33	0.87	0.212	0.163	(0.191)	0.049
173	14.42	0.87	0.212	0.162	(0.191)	0.050
174	14.50	0.87	0.212	0.161	(0.191)	0.051
175	14.58	0.87	0.212	0.160	(0.191)	0.052
176	14.67	0.87	0.212	0.159	(0.191)	0.053
177	14.75	0.87	0.212	0.159	(0.191)	0.054
178	14.83	0.83	0.204	0.158	(0.184)	0.046
179	14.92	0.83	0.204	0.157	(0.184)	0.047
180	15.00	0.83	0.204	0.156	(0.184)	0.048
181	15.08	0.80	0.196	0.155	(0.176)	0.040
182	15.17	0.80	0.196	0.155	(0.176)	0.041
183	15.25	0.80	0.196	0.154	(0.176)	0.042
184	15.33	0.77	0.188	0.153	(0.169)	0.035
185	15.42	0.77	0.188	0.152	(0.169)	0.035
186	15.50	0.77	0.188	0.151	(0.169)	0.036
187	15.58	0.63	0.155	(0.151)	0.140	0.016
188	15.67	0.63	0.155	(0.150)	0.140	0.016
189	15.75	0.63	0.155	(0.149)	0.140	0.016
190	15.83	0.63	0.155	(0.148)	0.140	0.016
191	15.92	0.63	0.155	(0.148)	0.140	0.016
192	16.00	0.63	0.155	(0.147)	0.140	0.016
193	16.08	0.13	0.033	(0.146)	0.029	0.003
194	16.17	0.13	0.033	(0.145)	0.029	0.003
195	16.25	0.13	0.033	(0.145)	0.029	0.003
196	16.33	0.13	0.033	(0.144)	0.029	0.003
197	16.42	0.13	0.033	(0.143)	0.029	0.003
198	16.50	0.13	0.033	(0.142)	0.029	0.003
199	16.58	0.10	0.024	(0.142)	0.022	0.002
200	16.67	0.10	0.024	(0.141)	0.022	0.002
201	16.75	0.10	0.024	(0.140)	0.022	0.002
202	16.83	0.10	0.024	(0.140)	0.022	0.002
203	16.92	0.10	0.024	(0.139)	0.022	0.002
204	17.00	0.10	0.024	(0.138)	0.022	0.002
205	17.08	0.17	0.041	(0.137)	0.037	0.004
206	17.17	0.17	0.041	(0.137)	0.037	0.004
207	17.25	0.17	0.041	(0.136)	0.037	0.004
208	17.33	0.17	0.041	(0.135)	0.037	0.004
209	17.42	0.17	0.041	(0.135)	0.037	0.004
210	17.50	0.17	0.041	(0.134)	0.037	0.004
211	17.58	0.17	0.041	(0.133)	0.037	0.004
212	17.67	0.17	0.041	(0.133)	0.037	0.004
213	17.75	0.17	0.041	(0.132)	0.037	0.004
214	17.83	0.13	0.033	(0.131)	0.029	0.003
215	17.92	0.13	0.033	(0.131)	0.029	0.003
216	18.00	0.13	0.033	(0.130)	0.029	0.003
217	18.08	0.13	0.033	(0.129)	0.029	0.003
218	18.17	0.13	0.033	(0.129)	0.029	0.003
219	18.25	0.13	0.033	(0.128)	0.029	0.003
220	18.33	0.13	0.033	(0.128)	0.029	0.003
221	18.42	0.13	0.033	(0.127)	0.029	0.003
222	18.50	0.13	0.033	(0.126)	0.029	0.003

223	18.58	0.10	0.024	(0.126)	0.022	0.002
224	18.67	0.10	0.024	(0.125)	0.022	0.002
225	18.75	0.10	0.024	(0.125)	0.022	0.002
226	18.83	0.07	0.016	(0.124)	0.015	0.002
227	18.92	0.07	0.016	(0.123)	0.015	0.002
228	19.00	0.07	0.016	(0.123)	0.015	0.002
229	19.08	0.10	0.024	(0.122)	0.022	0.002
230	19.17	0.10	0.024	(0.122)	0.022	0.002
231	19.25	0.10	0.024	(0.121)	0.022	0.002
232	19.33	0.13	0.033	(0.120)	0.029	0.003
233	19.42	0.13	0.033	(0.120)	0.029	0.003
234	19.50	0.13	0.033	(0.119)	0.029	0.003
235	19.58	0.10	0.024	(0.119)	0.022	0.002
236	19.67	0.10	0.024	(0.118)	0.022	0.002
237	19.75	0.10	0.024	(0.118)	0.022	0.002
238	19.83	0.07	0.016	(0.117)	0.015	0.002
239	19.92	0.07	0.016	(0.117)	0.015	0.002
240	20.00	0.07	0.016	(0.116)	0.015	0.002
241	20.08	0.10	0.024	(0.116)	0.022	0.002
242	20.17	0.10	0.024	(0.115)	0.022	0.002
243	20.25	0.10	0.024	(0.115)	0.022	0.002
244	20.33	0.10	0.024	(0.114)	0.022	0.002
245	20.42	0.10	0.024	(0.114)	0.022	0.002
246	20.50	0.10	0.024	(0.113)	0.022	0.002
247	20.58	0.10	0.024	(0.113)	0.022	0.002
248	20.67	0.10	0.024	(0.112)	0.022	0.002
249	20.75	0.10	0.024	(0.112)	0.022	0.002
250	20.83	0.07	0.016	(0.111)	0.015	0.002
251	20.92	0.07	0.016	(0.111)	0.015	0.002
252	21.00	0.07	0.016	(0.110)	0.015	0.002
253	21.08	0.10	0.024	(0.110)	0.022	0.002
254	21.17	0.10	0.024	(0.110)	0.022	0.002
255	21.25	0.10	0.024	(0.109)	0.022	0.002
256	21.33	0.07	0.016	(0.109)	0.015	0.002
257	21.42	0.07	0.016	(0.108)	0.015	0.002
258	21.50	0.07	0.016	(0.108)	0.015	0.002
259	21.58	0.10	0.024	(0.107)	0.022	0.002
260	21.67	0.10	0.024	(0.107)	0.022	0.002
261	21.75	0.10	0.024	(0.107)	0.022	0.002
262	21.83	0.07	0.016	(0.106)	0.015	0.002
263	21.92	0.07	0.016	(0.106)	0.015	0.002
264	22.00	0.07	0.016	(0.106)	0.015	0.002
265	22.08	0.10	0.024	(0.105)	0.022	0.002
266	22.17	0.10	0.024	(0.105)	0.022	0.002
267	22.25	0.10	0.024	(0.105)	0.022	0.002
268	22.33	0.07	0.016	(0.104)	0.015	0.002
269	22.42	0.07	0.016	(0.104)	0.015	0.002
270	22.50	0.07	0.016	(0.104)	0.015	0.002
271	22.58	0.07	0.016	(0.103)	0.015	0.002
272	22.67	0.07	0.016	(0.103)	0.015	0.002
273	22.75	0.07	0.016	(0.103)	0.015	0.002
274	22.83	0.07	0.016	(0.102)	0.015	0.002
275	22.92	0.07	0.016	(0.102)	0.015	0.002
276	23.00	0.07	0.016	(0.102)	0.015	0.002
277	23.08	0.07	0.016	(0.102)	0.015	0.002
278	23.17	0.07	0.016	(0.102)	0.015	0.002

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279  23.25     0.07      0.016       (  0.101)       0.015        0.002
280  23.33     0.07      0.016       (  0.101)       0.015        0.002
281  23.42     0.07      0.016       (  0.101)       0.015        0.002
282  23.50     0.07      0.016       (  0.101)       0.015        0.002
283  23.58     0.07      0.016       (  0.101)       0.015        0.002
284  23.67     0.07      0.016       (  0.100)       0.015        0.002
285  23.75     0.07      0.016       (  0.100)       0.015        0.002
286  23.83     0.07      0.016       (  0.100)       0.015        0.002
287  23.92     0.07      0.016       (  0.100)       0.015        0.002
288  24.00     0.07      0.016       (  0.100)       0.015        0.002
               (Loss Rate Not Used)
    Sum =     100.0                                    Sum =     3.6
       Flood volume = Effective rainfall      0.30(In)
        times area      50.4(Ac.)/[(In)/(Ft.)] =      1.3(Ac.Ft)
       Total soil loss =      1.74(In)
       Total soil loss =     7.309(Ac.Ft)
       Total rainfall =      2.04(In)
       Flood volume =       54800.6 Cubic Feet
       Total soil loss =      318384.8 Cubic Feet
       ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =      5.147(CFS)
       ---------------------------------------------------------------------
       +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          24 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
       ---------------------------------------------------------------------
                   Hydrograph in   5   Minute intervals ((CFS))

       ---------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
 ----------------------------------------------------------------------------
   0+ 5       0.0001      0.01  Q         |         |         |         |
   0+10       0.0004      0.04  Q         |         |         |         |
   0+15       0.0008      0.06  Q         |         |         |         |
   0+20       0.0013      0.07  Q         |         |         |         |
   0+25       0.0020      0.10  Q         |         |         |         |
   0+30       0.0027      0.11  Q         |         |         |         |
   0+35       0.0035      0.11  Q         |         |         |         |
   0+40       0.0043      0.12  Q         |         |         |         |
   0+45       0.0052      0.12  Q         |         |         |         |
   0+50       0.0060      0.13  Q         |         |         |         |
   0+55       0.0070      0.15  Q         |         |         |         |
   1+ 0       0.0081      0.15  Q         |         |         |         |
   1+ 5       0.0092      0.15  Q         |         |         |         |
   1+10       0.0101      0.14  Q         |         |         |         |
   1+15       0.0110      0.13  Q         |         |         |         |
   1+20       0.0119      0.13  Q         |         |         |         |
   1+25       0.0128      0.13  Q         |         |         |         |
   1+30       0.0137      0.13  Q         |         |         |         |
   1+35       0.0145      0.13  Q         |         |         |         |
   1+40       0.0154      0.13  Q         |         |         |         |
   1+45       0.0163      0.13  Q         |         |         |         |
   1+50       0.0171      0.13  Q         |         |         |         |
   1+55       0.0182      0.15  Q         |         |         |         |
   2+ 0       0.0192      0.16  Q         |         |         |         |
   2+ 5       0.0203      0.16  Q         |         |         |         |
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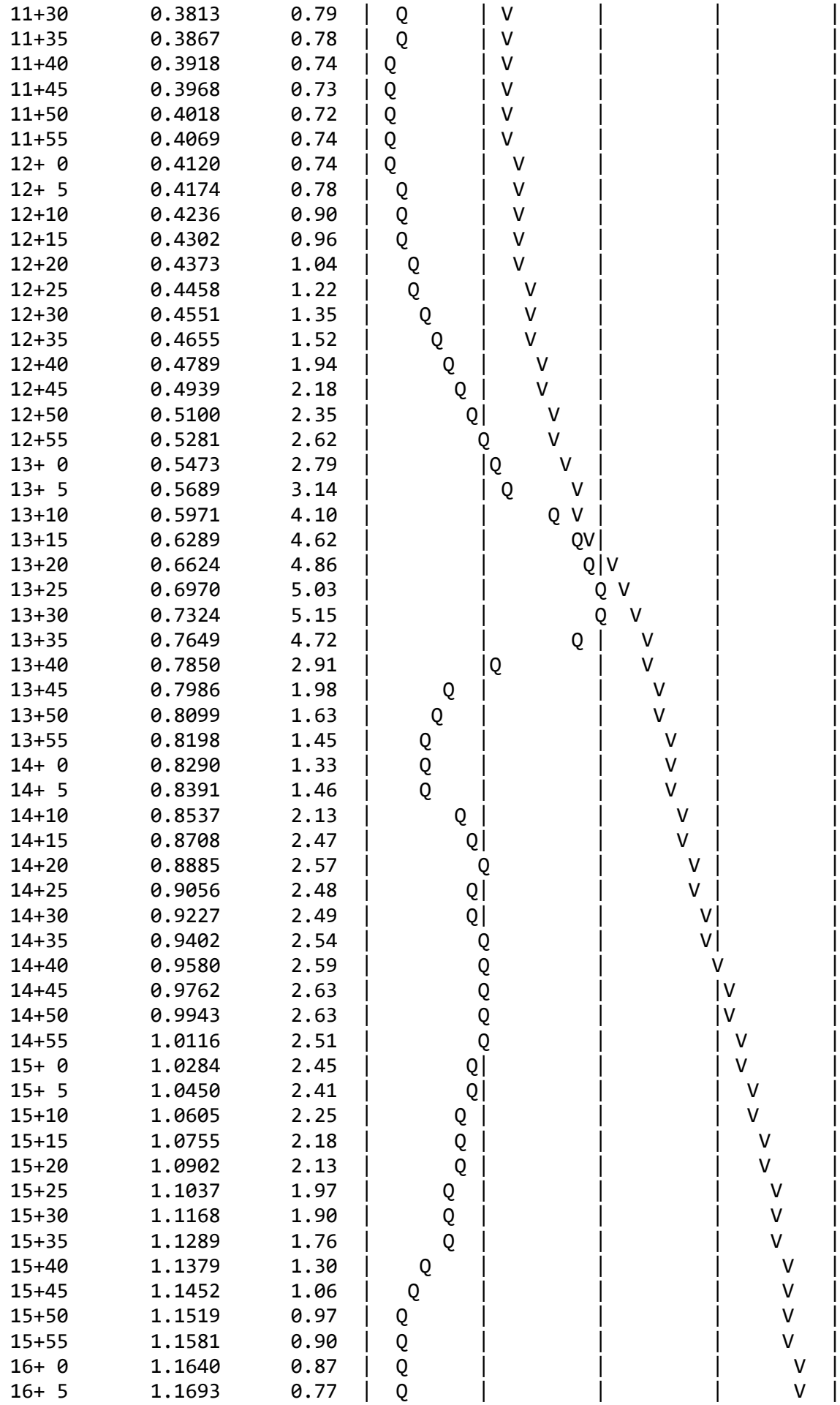
2+10	0.0214	0.16	Q				
2+15	0.0226	0.16	Q				
2+20	0.0237	0.16	Q				
2+25	0.0248	0.16	Q				
2+30	0.0260	0.17	Q				
2+35	0.0271	0.17	Q				
2+40	0.0284	0.19	Q				
2+45	0.0298	0.20	Q				
2+50	0.0312	0.20	Q				
2+55	0.0326	0.20	QV				
3+ 0	0.0340	0.20	QV				
3+ 5	0.0354	0.21	QV				
3+10	0.0368	0.21	QV				
3+15	0.0382	0.21	QV				
3+20	0.0397	0.21	QV				
3+25	0.0411	0.21	QV				
3+30	0.0425	0.21	QV				
3+35	0.0439	0.21	QV				
3+40	0.0454	0.21	QV				
3+45	0.0468	0.21	QV				
3+50	0.0483	0.21	QV				
3+55	0.0498	0.23	QV				
4+ 0	0.0515	0.24	QV				
4+ 5	0.0532	0.24	QV				
4+10	0.0548	0.24	QV				
4+15	0.0565	0.25	QV				
4+20	0.0583	0.25	|Q				
4+25	0.0601	0.27	|Q				
4+30	0.0620	0.28	|Q				
4+35	0.0640	0.28	|QV				
4+40	0.0660	0.29	|QV				
4+45	0.0679	0.29	|QV				
4+50	0.0700	0.29	|QV				
4+55	0.0721	0.31	|QV				
5+ 0	0.0743	0.32	|QV				
5+ 5	0.0765	0.32	|QV				
5+10	0.0784	0.28	|QV				
5+15	0.0803	0.27	|QV				
5+20	0.0821	0.26	|QV				
5+25	0.0840	0.28	|QV				
5+30	0.0860	0.29	|QV				
5+35	0.0880	0.29	|QV				
5+40	0.0901	0.31	|QV				
5+45	0.0923	0.32	|QV				
5+50	0.0946	0.32	|Q V				
5+55	0.0968	0.33	|Q V				
6+ 0	0.0991	0.33	|Q V				
6+ 5	0.1014	0.33	|Q V				
6+10	0.1038	0.35	|Q V				
6+15	0.1063	0.36	|Q V				
6+20	0.1088	0.37	|Q V				
6+25	0.1114	0.37	|Q V				
6+30	0.1139	0.37	|Q V				
6+35	0.1165	0.38	|Q V				
6+40	0.1192	0.39	|Q V				
6+45	0.1220	0.40	|Q V				

6+50	0.1248	0.41	Q V				
6+55	0.1276	0.41	Q V				
7+ 0	0.1305	0.41	Q V				
7+ 5	0.1333	0.41	Q V				
7+10	0.1361	0.41	Q V				
7+15	0.1390	0.41	Q V				
7+20	0.1419	0.42	Q V				
7+25	0.1449	0.44	Q V				
7+30	0.1480	0.45	Q V				
7+35	0.1511	0.45	Q V				
7+40	0.1544	0.47	Q V				
7+45	0.1577	0.48	Q V				
7+50	0.1611	0.49	Q V				
7+55	0.1646	0.51	Q V				
8+ 0	0.1683	0.53	Q V				
8+ 5	0.1720	0.54	Q V				
8+10	0.1760	0.58	Q V				
8+15	0.1801	0.60	Q V				
8+20	0.1843	0.61	Q V				
8+25	0.1885	0.61	Q V				
8+30	0.1927	0.62	Q V				
8+35	0.1970	0.62	Q V				
8+40	0.2014	0.64	Q V				
8+45	0.2059	0.65	Q V				
8+50	0.2105	0.66	Q V				
8+55	0.2151	0.68	Q V				
9+ 0	0.2199	0.69	Q V				
9+ 5	0.2248	0.71	Q V				
9+10	0.2299	0.74	Q V				
9+15	0.2352	0.76	Q V				
9+20	0.2405	0.78	Q V				
9+25	0.2460	0.80	Q V				
9+30	0.2516	0.81	Q V				
9+35	0.2573	0.82	Q V				
9+40	0.2631	0.84	Q V				
9+45	0.2690	0.86	Q V				
9+50	0.2750	0.87	Q V				
9+55	0.2811	0.89	Q V				
10+ 0	0.2873	0.90	Q V				
10+ 5	0.2933	0.87	Q V				
10+10	0.2984	0.75	Q V				
10+15	0.3032	0.69	Q V				
10+20	0.3078	0.67	Q V				
10+25	0.3122	0.65	Q V				
10+30	0.3167	0.64	Q V				
10+35	0.3212	0.66	Q V				
10+40	0.3263	0.74	Q V				
10+45	0.3317	0.78	Q V				
10+50	0.3372	0.80	Q V				
10+55	0.3428	0.81	Q V				
11+ 0	0.3484	0.81	Q V				
11+ 5	0.3540	0.81	Q V				
11+10	0.3595	0.80	Q V				
11+15	0.3650	0.79	Q V				
11+20	0.3704	0.79	Q V				
11+25	0.3759	0.79	Q V				



16+10	1.1727	0.48	|Q	|	|	|	V |
16+15	1.1750	0.34	|Q	|	|	|	V |
16+20	1.1769	0.27	|Q	|	|	|	V |
16+25	1.1784	0.23	Q	|	|	|	V |
16+30	1.1799	0.21	Q	|	|	|	V |
16+35	1.1812	0.19	Q	|	|	|	V |
16+40	1.1823	0.16	Q	|	|	|	V |
16+45	1.1833	0.15	Q	|	|	|	V |
16+50	1.1843	0.14	Q	|	|	|	V |
16+55	1.1852	0.13	Q	|	|	|	V |
17+ 0	1.1860	0.13	Q	|	|	|	V |
17+ 5	1.1870	0.14	Q	|	|	|	V |
17+10	1.1881	0.17	Q	|	|	|	V |
17+15	1.1894	0.19	Q	|	|	|	V |
17+20	1.1908	0.19	Q	|	|	|	V |
17+25	1.1921	0.20	Q	|	|	|	V |
17+30	1.1935	0.20	Q	|	|	|	V |
17+35	1.1949	0.20	Q	|	|	|	V |
17+40	1.1963	0.20	Q	|	|	|	V |
17+45	1.1978	0.21	Q	|	|	|	V |
17+50	1.1991	0.20	Q	|	|	|	V |
17+55	1.2004	0.18	Q	|	|	|	V |
18+ 0	1.2016	0.18	Q	|	|	|	V |
18+ 5	1.2028	0.17	Q	|	|	|	V |
18+10	1.2040	0.17	Q	|	|	|	V |
18+15	1.2052	0.17	Q	|	|	|	V |
18+20	1.2063	0.17	Q	|	|	|	V |
18+25	1.2075	0.17	Q	|	|	|	V |
18+30	1.2086	0.17	Q	|	|	|	V |
18+35	1.2097	0.16	Q	|	|	|	V |
18+40	1.2107	0.14	Q	|	|	|	V |
18+45	1.2116	0.13	Q	|	|	|	V |
18+50	1.2125	0.13	Q	|	|	|	V |
18+55	1.2132	0.11	Q	|	|	|	V |
19+ 0	1.2139	0.10	Q	|	|	|	V |
19+ 5	1.2146	0.10	Q	|	|	|	V |
19+10	1.2153	0.11	Q	|	|	|	V |
19+15	1.2161	0.12	Q	|	|	|	V |
19+20	1.2170	0.13	Q	|	|	|	V |
19+25	1.2180	0.14	Q	|	|	|	V |
19+30	1.2190	0.15	Q	|	|	|	V |
19+35	1.2201	0.15	Q	|	|	|	V |
19+40	1.2210	0.14	Q	|	|	|	V |
19+45	1.2220	0.13	Q	|	|	|	V |
19+50	1.2228	0.12	Q	|	|	|	V |
19+55	1.2235	0.11	Q	|	|	|	V |
20+ 0	1.2242	0.10	Q	|	|	|	V |
20+ 5	1.2248	0.10	Q	|	|	|	V |
20+10	1.2256	0.11	Q	|	|	|	V |
20+15	1.2264	0.12	Q	|	|	|	V |
20+20	1.2272	0.12	Q	|	|	|	V|
20+25	1.2281	0.12	Q	|	|	|	V|
20+30	1.2289	0.12	Q	|	|	|	V|
20+35	1.2298	0.12	Q	|	|	|	V|
20+40	1.2306	0.12	Q	|	|	|	V|
20+45	1.2315	0.12	Q	|	|	|	V|

20+50	1.2323	0.12	Q	|	|	|	V|
20+55	1.2330	0.10	Q	|	|	|	V|
21+ 0	1.2336	0.09	Q	|	|	|	V|
21+ 5	1.2343	0.09	Q	|	|	|	V|
21+10	1.2350	0.11	Q	|	|	|	V|
21+15	1.2358	0.12	Q	|	|	|	V|
21+20	1.2366	0.11	Q	|	|	|	V|
21+25	1.2373	0.10	Q	|	|	|	V|
21+30	1.2379	0.09	Q	|	|	|	V|
21+35	1.2386	0.09	Q	|	|	|	V|
21+40	1.2393	0.11	Q	|	|	|	V|
21+45	1.2401	0.12	Q	|	|	|	V|
21+50	1.2409	0.11	Q	|	|	|	V|
21+55	1.2416	0.10	Q	|	|	|	V|
22+ 0	1.2422	0.09	Q	|	|	|	V|
22+ 5	1.2429	0.09	Q	|	|	|	V|
22+10	1.2436	0.11	Q	|	|	|	V|
22+15	1.2444	0.12	Q	|	|	|	V|
22+20	1.2452	0.11	Q	|	|	|	V|
22+25	1.2459	0.10	Q	|	|	|	V|
22+30	1.2465	0.09	Q	|	|	|	V|
22+35	1.2471	0.09	Q	|	|	|	V|
22+40	1.2477	0.09	Q	|	|	|	V|
22+45	1.2483	0.09	Q	|	|	|	V|
22+50	1.2489	0.08	Q	|	|	|	V|
22+55	1.2495	0.08	Q	|	|	|	V|
23+ 0	1.2500	0.08	Q	|	|	|	V|
23+ 5	1.2506	0.08	Q	|	|	|	V|
23+10	1.2512	0.08	Q	|	|	|	V|
23+15	1.2518	0.08	Q	|	|	|	V|
23+20	1.2523	0.08	Q	|	|	|	V|
23+25	1.2529	0.08	Q	|	|	|	V|
23+30	1.2535	0.08	Q	|	|	|	V|
23+35	1.2540	0.08	Q	|	|	|	V|
23+40	1.2546	0.08	Q	|	|	|	V|
23+45	1.2552	0.08	Q	|	|	|	V|
23+50	1.2557	0.08	Q	|	|	|	V|
23+55	1.2563	0.08	Q	|	|	|	V|
24+ 0	1.2569	0.08	Q	|	|	|	V|
24+ 5	1.2574	0.07	Q	|	|	|	V|
24+10	1.2577	0.04	Q	|	|	|	V|
24+15	1.2578	0.02	Q	|	|	|	V|
24+20	1.2579	0.01	Q	|	|	|	V|
24+25	1.2579	0.01	Q	|	|	|	V|
24+30	1.2580	0.01	Q	|	|	|	V|
24+35	1.2580	0.00	Q	|	|	|	V|
24+40	1.2580	0.00	Q	|	|	|	V|
24+45	1.2580	0.00	Q	|	|	|	V|
24+50	1.2580	0.00	Q	|	|	|	V

U n i t H y d r o g r a p h A n a l y s i s

Study date 05/03/21 File: ONSITEPROP242.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 4010

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

20-0026 - MENIFEE COMMERCE CENTER
ONSITE UNIT HYDROGRAPH ANALYSIS
PROPOSED CONDITION, 2-YEAR 24-HOUR: BUILDING 1
FN: ONSITEPROP242.OUT- TSW

Drainage Area = 50.40(Ac.) = 0.079 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 50.40(Ac.) = 0.079 Sq. Mi.
Length along longest watercourse = 3240.00(Ft.)
Length along longest watercourse measured to centroid = 1908.00(Ft.)
Length along longest watercourse = 0.614 Mi.
Length along longest watercourse measured to centroid = 0.361 Mi.
Difference in elevation = 13.10(Ft.)
Slope along watercourse = 21.3481 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.114 Hr.
Lag time = 6.81 Min.
25% of lag time = 1.70 Min.
40% of lag time = 2.72 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
50.40	2.04	102.82

100 YEAR Area rainfall data:

```
Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       50.40            5.33                 268.63

STORM EVENT (YEAR) =    2.00
Area Averaged 2-Year Rainfall =    2.040(In)
Area Averaged 100-Year Rainfall =    5.330(In)

Point rain (area averaged) =    2.040(In)
Areal adjustment factor =   99.99 %
Adjusted average point rain =    2.040(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
    50.400           69.00         0.900
 Total Area Entered =     50.40(Ac.)


RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
AMC2 AMC-1     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
69.0  49.8      0.574     0.900        0.109       1.000      0.109
                                                 Sum (F) =   0.109
Area averaged mean soil loss (F) (In/Hr) =  0.109
Minimum soil loss rate ((In/Hr)) =  0.055
(for 24 hour storm duration)
Soil low loss rate (decimal) =   0.200
------------------------------------------------------------------------

               U n i t  H y d r o g r a p h
                       VALLEY S-Curve
------------------------------------------------------------------------
               Unit Hydrograph Data
------------------------------------------------------------------------
Unit time period   Time % of lag   Distribution   Unit Hydrograph
    (hrs)                          Graph %            (CFS)
------------------------------------------------------------------------
    1   0.083         73.396         11.507              5.845
    2   0.167        146.791         41.767             21.215
    3   0.250        220.187         21.998             11.174
    4   0.333        293.582          8.720              4.429
    5   0.417        366.978          5.290              2.687
    6   0.500        440.373          3.446              1.751
    7   0.583        513.769          2.372              1.205
    8   0.667        587.164          1.772              0.900
    9   0.750        660.560          1.254              0.637
   10   0.833        733.955          0.846              0.430
   11   0.917        807.351          1.027              0.522
                               Sum = 100.000   Sum=      50.794
------------------------------------------------------------------------

 The following loss rate calculations reflect use of the minimum calculated loss
 rate subtracted from the Storm Rain to produce the maximum Effective Rain value

 Unit Time   Pattern   Storm Rain     Loss rate(In./Hr)     Effective
      (Hr.)  Percent   (In/Hr)         Max   |   Low        (In/Hr)
```

1	0.08	0.07	0.016	(0.193)	0.003	0.013
2	0.17	0.07	0.016	(0.193)	0.003	0.013
3	0.25	0.07	0.016	(0.192)	0.003	0.013
4	0.33	0.10	0.024	(0.191)	0.005	0.020
5	0.42	0.10	0.024	(0.190)	0.005	0.020
6	0.50	0.10	0.024	(0.190)	0.005	0.020
7	0.58	0.10	0.024	(0.189)	0.005	0.020
8	0.67	0.10	0.024	(0.188)	0.005	0.020
9	0.75	0.10	0.024	(0.187)	0.005	0.020
10	0.83	0.13	0.033	(0.187)	0.007	0.026
11	0.92	0.13	0.033	(0.186)	0.007	0.026
12	1.00	0.13	0.033	(0.185)	0.007	0.026
13	1.08	0.10	0.024	(0.184)	0.005	0.020
14	1.17	0.10	0.024	(0.184)	0.005	0.020
15	1.25	0.10	0.024	(0.183)	0.005	0.020
16	1.33	0.10	0.024	(0.182)	0.005	0.020
17	1.42	0.10	0.024	(0.182)	0.005	0.020
18	1.50	0.10	0.024	(0.181)	0.005	0.020
19	1.58	0.10	0.024	(0.180)	0.005	0.020
20	1.67	0.10	0.024	(0.179)	0.005	0.020
21	1.75	0.10	0.024	(0.179)	0.005	0.020
22	1.83	0.13	0.033	(0.178)	0.007	0.026
23	1.92	0.13	0.033	(0.177)	0.007	0.026
24	2.00	0.13	0.033	(0.176)	0.007	0.026
25	2.08	0.13	0.033	(0.176)	0.007	0.026
26	2.17	0.13	0.033	(0.175)	0.007	0.026
27	2.25	0.13	0.033	(0.174)	0.007	0.026
28	2.33	0.13	0.033	(0.174)	0.007	0.026
29	2.42	0.13	0.033	(0.173)	0.007	0.026
30	2.50	0.13	0.033	(0.172)	0.007	0.026
31	2.58	0.17	0.041	(0.172)	0.008	0.033
32	2.67	0.17	0.041	(0.171)	0.008	0.033
33	2.75	0.17	0.041	(0.170)	0.008	0.033
34	2.83	0.17	0.041	(0.169)	0.008	0.033
35	2.92	0.17	0.041	(0.169)	0.008	0.033
36	3.00	0.17	0.041	(0.168)	0.008	0.033
37	3.08	0.17	0.041	(0.167)	0.008	0.033
38	3.17	0.17	0.041	(0.167)	0.008	0.033
39	3.25	0.17	0.041	(0.166)	0.008	0.033
40	3.33	0.17	0.041	(0.165)	0.008	0.033
41	3.42	0.17	0.041	(0.165)	0.008	0.033
42	3.50	0.17	0.041	(0.164)	0.008	0.033
43	3.58	0.17	0.041	(0.163)	0.008	0.033
44	3.67	0.17	0.041	(0.162)	0.008	0.033
45	3.75	0.17	0.041	(0.162)	0.008	0.033
46	3.83	0.20	0.049	(0.161)	0.010	0.039
47	3.92	0.20	0.049	(0.160)	0.010	0.039
48	4.00	0.20	0.049	(0.160)	0.010	0.039
49	4.08	0.20	0.049	(0.159)	0.010	0.039
50	4.17	0.20	0.049	(0.158)	0.010	0.039
51	4.25	0.20	0.049	(0.158)	0.010	0.039
52	4.33	0.23	0.057	(0.157)	0.011	0.046
53	4.42	0.23	0.057	(0.156)	0.011	0.046
54	4.50	0.23	0.057	(0.156)	0.011	0.046
55	4.58	0.23	0.057	(0.155)	0.011	0.046
56	4.67	0.23	0.057	(0.154)	0.011	0.046

57	4.75	0.23	0.057	(0.154)	0.011	0.046
58	4.83	0.27	0.065	(0.153)	0.013	0.052
59	4.92	0.27	0.065	(0.152)	0.013	0.052
60	5.00	0.27	0.065	(0.152)	0.013	0.052
61	5.08	0.20	0.049	(0.151)	0.010	0.039
62	5.17	0.20	0.049	(0.150)	0.010	0.039
63	5.25	0.20	0.049	(0.150)	0.010	0.039
64	5.33	0.23	0.057	(0.149)	0.011	0.046
65	5.42	0.23	0.057	(0.148)	0.011	0.046
66	5.50	0.23	0.057	(0.148)	0.011	0.046
67	5.58	0.27	0.065	(0.147)	0.013	0.052
68	5.67	0.27	0.065	(0.147)	0.013	0.052
69	5.75	0.27	0.065	(0.146)	0.013	0.052
70	5.83	0.27	0.065	(0.145)	0.013	0.052
71	5.92	0.27	0.065	(0.145)	0.013	0.052
72	6.00	0.27	0.065	(0.144)	0.013	0.052
73	6.08	0.30	0.073	(0.143)	0.015	0.059
74	6.17	0.30	0.073	(0.143)	0.015	0.059
75	6.25	0.30	0.073	(0.142)	0.015	0.059
76	6.33	0.30	0.073	(0.141)	0.015	0.059
77	6.42	0.30	0.073	(0.141)	0.015	0.059
78	6.50	0.30	0.073	(0.140)	0.015	0.059
79	6.58	0.33	0.082	(0.140)	0.016	0.065
80	6.67	0.33	0.082	(0.139)	0.016	0.065
81	6.75	0.33	0.082	(0.138)	0.016	0.065
82	6.83	0.33	0.082	(0.138)	0.016	0.065
83	6.92	0.33	0.082	(0.137)	0.016	0.065
84	7.00	0.33	0.082	(0.136)	0.016	0.065
85	7.08	0.33	0.082	(0.136)	0.016	0.065
86	7.17	0.33	0.082	(0.135)	0.016	0.065
87	7.25	0.33	0.082	(0.135)	0.016	0.065
88	7.33	0.37	0.090	(0.134)	0.018	0.072
89	7.42	0.37	0.090	(0.133)	0.018	0.072
90	7.50	0.37	0.090	(0.133)	0.018	0.072
91	7.58	0.40	0.098	(0.132)	0.020	0.078
92	7.67	0.40	0.098	(0.131)	0.020	0.078
93	7.75	0.40	0.098	(0.131)	0.020	0.078
94	7.83	0.43	0.106	(0.130)	0.021	0.085
95	7.92	0.43	0.106	(0.130)	0.021	0.085
96	8.00	0.43	0.106	(0.129)	0.021	0.085
97	8.08	0.50	0.122	(0.128)	0.024	0.098
98	8.17	0.50	0.122	(0.128)	0.024	0.098
99	8.25	0.50	0.122	(0.127)	0.024	0.098
100	8.33	0.50	0.122	(0.127)	0.024	0.098
101	8.42	0.50	0.122	(0.126)	0.024	0.098
102	8.50	0.50	0.122	(0.125)	0.024	0.098
103	8.58	0.53	0.131	(0.125)	0.026	0.104
104	8.67	0.53	0.131	(0.124)	0.026	0.104
105	8.75	0.53	0.131	(0.124)	0.026	0.104
106	8.83	0.57	0.139	(0.123)	0.028	0.111
107	8.92	0.57	0.139	(0.123)	0.028	0.111
108	9.00	0.57	0.139	(0.122)	0.028	0.111
109	9.08	0.63	0.155	(0.121)	0.031	0.124
110	9.17	0.63	0.155	(0.121)	0.031	0.124
111	9.25	0.63	0.155	(0.120)	0.031	0.124
112	9.33	0.67	0.163	(0.120)	0.033	0.131

113	9.42	0.67	0.163	(0.119)	0.033	0.131
114	9.50	0.67	0.163	(0.119)	0.033	0.131
115	9.58	0.70	0.171	(0.118)	0.034	0.137
116	9.67	0.70	0.171	(0.117)	0.034	0.137
117	9.75	0.70	0.171	(0.117)	0.034	0.137
118	9.83	0.73	0.180	(0.116)	0.036	0.144
119	9.92	0.73	0.180	(0.116)	0.036	0.144
120	10.00	0.73	0.180	(0.115)	0.036	0.144
121	10.08	0.50	0.122	(0.115)	0.024	0.098
122	10.17	0.50	0.122	(0.114)	0.024	0.098
123	10.25	0.50	0.122	(0.113)	0.024	0.098
124	10.33	0.50	0.122	(0.113)	0.024	0.098
125	10.42	0.50	0.122	(0.112)	0.024	0.098
126	10.50	0.50	0.122	(0.112)	0.024	0.098
127	10.58	0.67	0.163	(0.111)	0.033	0.131
128	10.67	0.67	0.163	(0.111)	0.033	0.131
129	10.75	0.67	0.163	(0.110)	0.033	0.131
130	10.83	0.67	0.163	(0.110)	0.033	0.131
131	10.92	0.67	0.163	(0.109)	0.033	0.131
132	11.00	0.67	0.163	(0.109)	0.033	0.131
133	11.08	0.63	0.155	(0.108)	0.031	0.124
134	11.17	0.63	0.155	(0.108)	0.031	0.124
135	11.25	0.63	0.155	(0.107)	0.031	0.124
136	11.33	0.63	0.155	(0.106)	0.031	0.124
137	11.42	0.63	0.155	(0.106)	0.031	0.124
138	11.50	0.63	0.155	(0.105)	0.031	0.124
139	11.58	0.57	0.139	(0.105)	0.028	0.111
140	11.67	0.57	0.139	(0.104)	0.028	0.111
141	11.75	0.57	0.139	(0.104)	0.028	0.111
142	11.83	0.60	0.147	(0.103)	0.029	0.117
143	11.92	0.60	0.147	(0.103)	0.029	0.117
144	12.00	0.60	0.147	(0.102)	0.029	0.117
145	12.08	0.83	0.204	(0.102)	0.041	0.163
146	12.17	0.83	0.204	(0.101)	0.041	0.163
147	12.25	0.83	0.204	(0.101)	0.041	0.163
148	12.33	0.87	0.212	(0.100)	0.042	0.170
149	12.42	0.87	0.212	(0.100)	0.042	0.170
150	12.50	0.87	0.212	(0.099)	0.042	0.170
151	12.58	0.93	0.228	(0.099)	0.046	0.183
152	12.67	0.93	0.228	(0.098)	0.046	0.183
153	12.75	0.93	0.228	(0.098)	0.046	0.183
154	12.83	0.97	0.237	(0.097)	0.047	0.189
155	12.92	0.97	0.237	(0.097)	0.047	0.189
156	13.00	0.97	0.237	(0.096)	0.047	0.189
157	13.08	1.13	0.277	(0.096)	0.055	0.222
158	13.17	1.13	0.277	(0.095)	0.055	0.222
159	13.25	1.13	0.277	(0.095)	0.055	0.222
160	13.33	1.13	0.277	(0.094)	0.055	0.222
161	13.42	1.13	0.277	(0.094)	0.055	0.222
162	13.50	1.13	0.277	(0.093)	0.055	0.222
163	13.58	0.77	0.188	(0.093)	0.038	0.150
164	13.67	0.77	0.188	(0.092)	0.038	0.150
165	13.75	0.77	0.188	(0.092)	0.038	0.150
166	13.83	0.77	0.188	(0.092)	0.038	0.150
167	13.92	0.77	0.188	(0.091)	0.038	0.150
168	14.00	0.77	0.188	(0.091)	0.038	0.150

169	14.08	0.90	0.220	(0.090)	0.044	0.176
170	14.17	0.90	0.220	(0.090)	0.044	0.176
171	14.25	0.90	0.220	(0.089)	0.044	0.176
172	14.33	0.87	0.212	(0.089)	0.042	0.170
173	14.42	0.87	0.212	(0.088)	0.042	0.170
174	14.50	0.87	0.212	(0.088)	0.042	0.170
175	14.58	0.87	0.212	(0.087)	0.042	0.170
176	14.67	0.87	0.212	(0.087)	0.042	0.170
177	14.75	0.87	0.212	(0.086)	0.042	0.170
178	14.83	0.83	0.204	(0.086)	0.041	0.163
179	14.92	0.83	0.204	(0.086)	0.041	0.163
180	15.00	0.83	0.204	(0.085)	0.041	0.163
181	15.08	0.80	0.196	(0.085)	0.039	0.157
182	15.17	0.80	0.196	(0.084)	0.039	0.157
183	15.25	0.80	0.196	(0.084)	0.039	0.157
184	15.33	0.77	0.188	(0.083)	0.038	0.150
185	15.42	0.77	0.188	(0.083)	0.038	0.150
186	15.50	0.77	0.188	(0.083)	0.038	0.150
187	15.58	0.63	0.155	(0.082)	0.031	0.124
188	15.67	0.63	0.155	(0.082)	0.031	0.124
189	15.75	0.63	0.155	(0.081)	0.031	0.124
190	15.83	0.63	0.155	(0.081)	0.031	0.124
191	15.92	0.63	0.155	(0.080)	0.031	0.124
192	16.00	0.63	0.155	(0.080)	0.031	0.124
193	16.08	0.13	0.033	(0.080)	0.007	0.026
194	16.17	0.13	0.033	(0.079)	0.007	0.026
195	16.25	0.13	0.033	(0.079)	0.007	0.026
196	16.33	0.13	0.033	(0.078)	0.007	0.026
197	16.42	0.13	0.033	(0.078)	0.007	0.026
198	16.50	0.13	0.033	(0.078)	0.007	0.026
199	16.58	0.10	0.024	(0.077)	0.005	0.020
200	16.67	0.10	0.024	(0.077)	0.005	0.020
201	16.75	0.10	0.024	(0.076)	0.005	0.020
202	16.83	0.10	0.024	(0.076)	0.005	0.020
203	16.92	0.10	0.024	(0.076)	0.005	0.020
204	17.00	0.10	0.024	(0.075)	0.005	0.020
205	17.08	0.17	0.041	(0.075)	0.008	0.033
206	17.17	0.17	0.041	(0.075)	0.008	0.033
207	17.25	0.17	0.041	(0.074)	0.008	0.033
208	17.33	0.17	0.041	(0.074)	0.008	0.033
209	17.42	0.17	0.041	(0.073)	0.008	0.033
210	17.50	0.17	0.041	(0.073)	0.008	0.033
211	17.58	0.17	0.041	(0.073)	0.008	0.033
212	17.67	0.17	0.041	(0.072)	0.008	0.033
213	17.75	0.17	0.041	(0.072)	0.008	0.033
214	17.83	0.13	0.033	(0.072)	0.007	0.026
215	17.92	0.13	0.033	(0.071)	0.007	0.026
216	18.00	0.13	0.033	(0.071)	0.007	0.026
217	18.08	0.13	0.033	(0.071)	0.007	0.026
218	18.17	0.13	0.033	(0.070)	0.007	0.026
219	18.25	0.13	0.033	(0.070)	0.007	0.026
220	18.33	0.13	0.033	(0.070)	0.007	0.026
221	18.42	0.13	0.033	(0.069)	0.007	0.026
222	18.50	0.13	0.033	(0.069)	0.007	0.026
223	18.58	0.10	0.024	(0.069)	0.005	0.020
224	18.67	0.10	0.024	(0.068)	0.005	0.020

225	18.75	0.10	0.024	(0.068)	0.005	0.020
226	18.83	0.07	0.016	(0.068)	0.003	0.013
227	18.92	0.07	0.016	(0.067)	0.003	0.013
228	19.00	0.07	0.016	(0.067)	0.003	0.013
229	19.08	0.10	0.024	(0.067)	0.005	0.020
230	19.17	0.10	0.024	(0.066)	0.005	0.020
231	19.25	0.10	0.024	(0.066)	0.005	0.020
232	19.33	0.13	0.033	(0.066)	0.007	0.026
233	19.42	0.13	0.033	(0.065)	0.007	0.026
234	19.50	0.13	0.033	(0.065)	0.007	0.026
235	19.58	0.10	0.024	(0.065)	0.005	0.020
236	19.67	0.10	0.024	(0.064)	0.005	0.020
237	19.75	0.10	0.024	(0.064)	0.005	0.020
238	19.83	0.07	0.016	(0.064)	0.003	0.013
239	19.92	0.07	0.016	(0.064)	0.003	0.013
240	20.00	0.07	0.016	(0.063)	0.003	0.013
241	20.08	0.10	0.024	(0.063)	0.005	0.020
242	20.17	0.10	0.024	(0.063)	0.005	0.020
243	20.25	0.10	0.024	(0.062)	0.005	0.020
244	20.33	0.10	0.024	(0.062)	0.005	0.020
245	20.42	0.10	0.024	(0.062)	0.005	0.020
246	20.50	0.10	0.024	(0.062)	0.005	0.020
247	20.58	0.10	0.024	(0.061)	0.005	0.020
248	20.67	0.10	0.024	(0.061)	0.005	0.020
249	20.75	0.10	0.024	(0.061)	0.005	0.020
250	20.83	0.07	0.016	(0.061)	0.003	0.013
251	20.92	0.07	0.016	(0.060)	0.003	0.013
252	21.00	0.07	0.016	(0.060)	0.003	0.013
253	21.08	0.10	0.024	(0.060)	0.005	0.020
254	21.17	0.10	0.024	(0.060)	0.005	0.020
255	21.25	0.10	0.024	(0.059)	0.005	0.020
256	21.33	0.07	0.016	(0.059)	0.003	0.013
257	21.42	0.07	0.016	(0.059)	0.003	0.013
258	21.50	0.07	0.016	(0.059)	0.003	0.013
259	21.58	0.10	0.024	(0.059)	0.005	0.020
260	21.67	0.10	0.024	(0.058)	0.005	0.020
261	21.75	0.10	0.024	(0.058)	0.005	0.020
262	21.83	0.07	0.016	(0.058)	0.003	0.013
263	21.92	0.07	0.016	(0.058)	0.003	0.013
264	22.00	0.07	0.016	(0.058)	0.003	0.013
265	22.08	0.10	0.024	(0.057)	0.005	0.020
266	22.17	0.10	0.024	(0.057)	0.005	0.020
267	22.25	0.10	0.024	(0.057)	0.005	0.020
268	22.33	0.07	0.016	(0.057)	0.003	0.013
269	22.42	0.07	0.016	(0.057)	0.003	0.013
270	22.50	0.07	0.016	(0.057)	0.003	0.013
271	22.58	0.07	0.016	(0.056)	0.003	0.013
272	22.67	0.07	0.016	(0.056)	0.003	0.013
273	22.75	0.07	0.016	(0.056)	0.003	0.013
274	22.83	0.07	0.016	(0.056)	0.003	0.013
275	22.92	0.07	0.016	(0.056)	0.003	0.013
276	23.00	0.07	0.016	(0.056)	0.003	0.013
277	23.08	0.07	0.016	(0.055)	0.003	0.013
278	23.17	0.07	0.016	(0.055)	0.003	0.013
279	23.25	0.07	0.016	(0.055)	0.003	0.013
280	23.33	0.07	0.016	(0.055)	0.003	0.013

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281  23.42     0.07      0.016       (  0.055)       0.003        0.013
282  23.50     0.07      0.016       (  0.055)       0.003        0.013
283  23.58     0.07      0.016       (  0.055)       0.003        0.013
284  23.67     0.07      0.016       (  0.055)       0.003        0.013
285  23.75     0.07      0.016       (  0.055)       0.003        0.013
286  23.83     0.07      0.016       (  0.055)       0.003        0.013
287  23.92     0.07      0.016       (  0.055)       0.003        0.013
288  24.00     0.07      0.016       (  0.055)       0.003        0.013
                (Loss Rate Not Used)
    Sum =     100.0                                      Sum =    19.6
       Flood volume = Effective rainfall      1.63(In)
        times area      50.4(Ac.)/[(In)/(Ft.)] =       6.9(Ac.Ft)
       Total soil loss =      0.41(In)
       Total soil loss =     1.713(Ac.Ft)
       Total rainfall =      2.04(In)
       Flood volume =      298548.3 Cubic Feet
       Total soil loss =       74637.1 Cubic Feet
       ---------------------------------------------------------------------
        Peak flow rate of this hydrograph =     11.152(CFS)
       ---------------------------------------------------------------------
       +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                           24 - H O U R    S T O R M
                      R u n o f f      H y d r o g r a p h
       ---------------------------------------------------------------------
                   Hydrograph in   5   Minute intervals ((CFS))

       ---------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0        5.0      10.0      15.0      20.0
 ----------------------------------------------------------------------------
   0+ 5       0.0005      0.08  Q          |          |          |          |
   0+10       0.0030      0.35  Q          |          |          |          |
   0+15       0.0064      0.50  Q          |          |          |          |
   0+20       0.0105      0.60  VQ         |          |          |          |
   0+25       0.0158      0.77  VQ         |          |          |          |
   0+30       0.0218      0.86  VQ         |          |          |          |
   0+35       0.0280      0.91  VQ         |          |          |          |
   0+40       0.0345      0.94  VQ         |          |          |          |
   0+45       0.0411      0.96  VQ         |          |          |          |
   0+50       0.0480      1.01  V Q        |          |          |          |
   0+55       0.0560      1.16  V Q        |          |          |          |
   1+ 0       0.0646      1.24  V Q        |          |          |          |
   1+ 5       0.0731      1.23  V Q        |          |          |          |
   1+10       0.0807      1.11  V Q        |          |          |          |
   1+15       0.0880      1.05  V Q        |          |          |          |
   1+20       0.0951      1.03  V Q        |          |          |          |
   1+25       0.1021      1.02  V Q        |          |          |          |
   1+30       0.1091      1.01  V Q        |          |          |          |
   1+35       0.1160      1.01  V Q        |          |          |          |
   1+40       0.1230      1.01  V Q        |          |          |          |
   1+45       0.1299      1.00  V Q        |          |          |          |
   1+50       0.1370      1.04  V Q        |          |          |          |
   1+55       0.1451      1.17  V Q        |          |          |          |
   2+ 0       0.1536      1.24  V Q        |          |          |          |
   2+ 5       0.1624      1.27  V Q        |          |          |          |
   2+10       0.1713      1.29  V Q        |          |          |          |
   2+15       0.1803      1.30  |VQ        |          |          |          |
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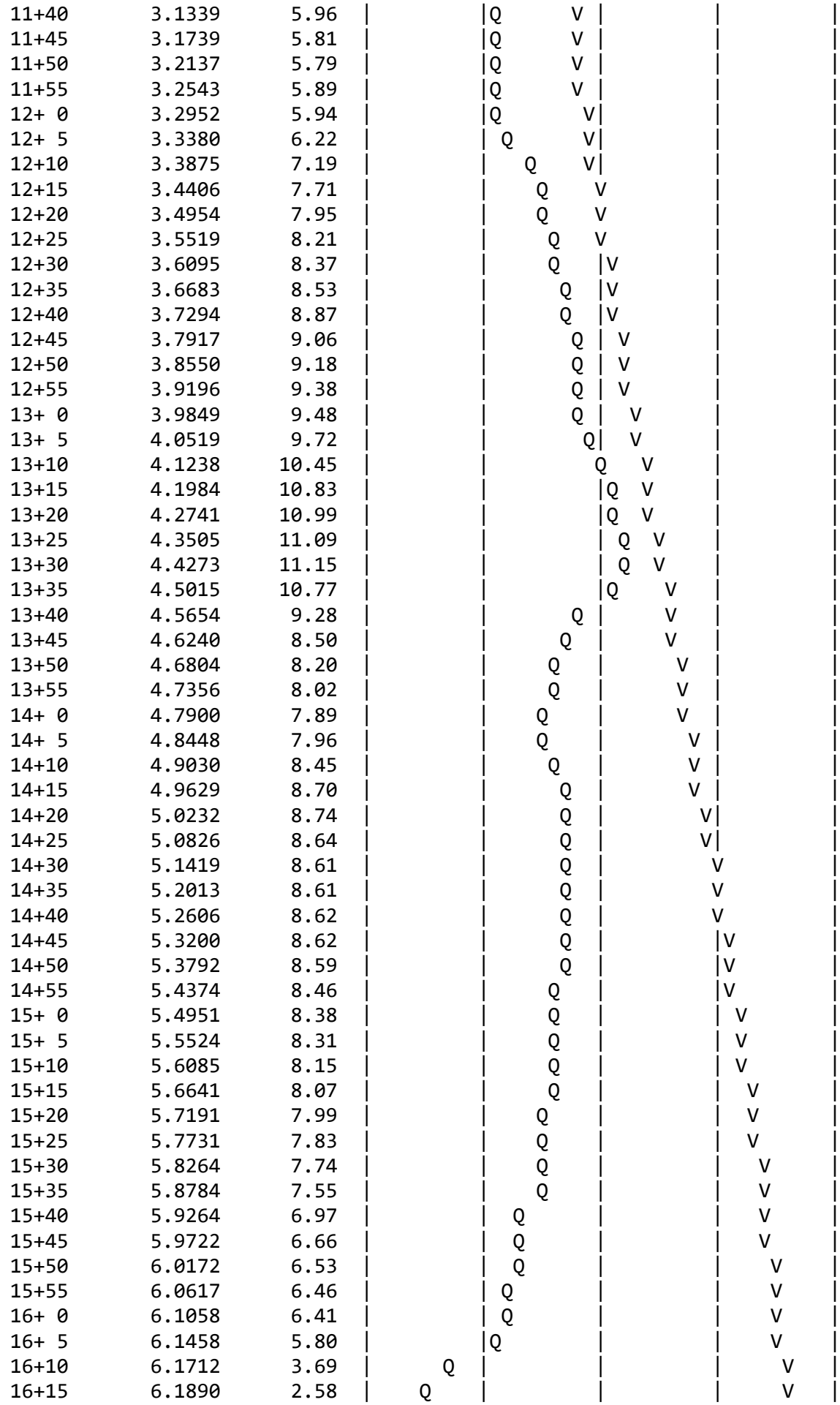
2+20	0.1893	1.31	VQ			
2+25	0.1984	1.32	VQ			
2+30	0.2075	1.32	VQ			
2+35	0.2169	1.36	VQ			
2+40	0.2272	1.50	V Q			
2+45	0.2381	1.58	V Q			
2+50	0.2491	1.61	V Q			
2+55	0.2603	1.62	V Q			
3+ 0	0.2716	1.63	V Q			
3+ 5	0.2829	1.64	V Q			
3+10	0.2942	1.65	V Q			
3+15	0.3056	1.65	V Q			
3+20	0.3170	1.66	V Q			
3+25	0.3284	1.66	V Q			
3+30	0.3398	1.66	V Q			
3+35	0.3513	1.66	VQ			
3+40	0.3627	1.66	VQ			
3+45	0.3741	1.66	VQ			
3+50	0.3858	1.70	VQ			
3+55	0.3984	1.84	VQ			
4+ 0	0.4116	1.91	VQ			
4+ 5	0.4249	1.94	VQ			
4+10	0.4384	1.95	VQ			
4+15	0.4519	1.97	VQ			
4+20	0.4658	2.01	V Q			
4+25	0.4806	2.16	V Q			
4+30	0.4960	2.23	V Q			
4+35	0.5116	2.27	V Q			
4+40	0.5274	2.29	VQ			
4+45	0.5432	2.30	VQ			
4+50	0.5593	2.34	VQ			
4+55	0.5765	2.49	VQ			
5+ 0	0.5941	2.57	V Q			
5+ 5	0.6115	2.52	V Q			
5+10	0.6271	2.26	VQ			
5+15	0.6418	2.13	VQ			
5+20	0.6564	2.12	VQ			
5+25	0.6717	2.23	VQ			
5+30	0.6874	2.28	Q			
5+35	0.7035	2.34	Q			
5+40	0.7206	2.48	Q			
5+45	0.7383	2.56	VQ			
5+50	0.7561	2.59	VQ			
5+55	0.7741	2.61	VQ			
6+ 0	0.7921	2.62	VQ			
6+ 5	0.8105	2.67	VQ			
6+10	0.8300	2.82	VQ			
6+15	0.8499	2.90	VQ			
6+20	0.8701	2.93	Q			
6+25	0.8904	2.95	Q			
6+30	0.9108	2.96	Q			
6+35	0.9315	3.01	VQ			
6+40	0.9532	3.15	VQ			
6+45	0.9755	3.23	VQ			
6+50	0.9979	3.26	VQ			
6+55	1.0205	3.28	VQ			

7+ 0	1.0432	3.29	Q				
7+ 5	1.0659	3.30	Q				
7+10	1.0887	3.31	Q				
7+15	1.1115	3.31	Q				
7+20	1.1346	3.35	Q				
7+25	1.1586	3.49	Q				
7+30	1.1832	3.57	VQ				
7+35	1.2082	3.63	Q				
7+40	1.2343	3.79	Q				
7+45	1.2610	3.87	Q				
7+50	1.2882	3.95	Q				
7+55	1.3165	4.11	VQ				
8+ 0	1.3455	4.20	VQ				
8+ 5	1.3752	4.32	Q				
8+10	1.4070	4.62	VQ				
8+15	1.4399	4.78	VQ				
8+20	1.4733	4.85	VQ				
8+25	1.5070	4.89	VQ				
8+30	1.5409	4.92	VQ				
8+35	1.5752	4.98	Q				
8+40	1.6106	5.13	VQ				
8+45	1.6465	5.21	VQ				
8+50	1.6829	5.29	VQ				
8+55	1.7204	5.45	Q				
9+ 0	1.7585	5.53	VQ				
9+ 5	1.7974	5.65	VQ				
9+10	1.8383	5.95	VQ				
9+15	1.8804	6.11	V Q				
9+20	1.9232	6.21	VQ				
9+25	1.9673	6.40	VQ				
9+30	2.0120	6.50	VQ				
9+35	2.0574	6.58	VQ				
9+40	2.1039	6.75	VQ				
9+45	2.1511	6.85	VQ				
9+50	2.1988	6.93	VQ				
9+55	2.2476	7.10	VQ				
10+ 0	2.2971	7.19	VQ				
10+ 5	2.3451	6.96	Q				
10+10	2.3865	6.01	QV				
10+15	2.4245	5.52	Q V				
10+20	2.4612	5.33	Q V				
10+25	2.4971	5.21	Q V				
10+30	2.5325	5.14	Q V				
10+35	2.5688	5.28	Q V				
10+40	2.6097	5.93	Q V				
10+45	2.6528	6.27	Q V				
10+50	2.6969	6.39	Q V				
10+55	2.7413	6.46	Q V				
11+ 0	2.7862	6.51	Q V				
11+ 5	2.8311	6.51	Q V				
11+10	2.8752	6.41	Q V				
11+15	2.9189	6.35	Q V				
11+20	2.9626	6.34	Q V				
11+25	3.0063	6.34	Q V				
11+30	3.0498	6.33	Q V				
11+35	3.0928	6.24	Q V				



16+20	6.2037	2.14	Q				V
16+25	6.2165	1.86	Q				V
16+30	6.2281	1.69	Q				V
16+35	6.2387	1.53	Q				V
16+40	6.2477	1.31	Q				V
16+45	6.2557	1.17	Q				V
16+50	6.2633	1.10	Q				V
16+55	6.2704	1.03	Q				V
17+ 0	6.2774	1.02	Q				V
17+ 5	6.2849	1.09	Q				V
17+10	6.2943	1.36	Q				V
17+15	6.3046	1.50	Q				V
17+20	6.3153	1.56	Q				V
17+25	6.3263	1.59	Q				V
17+30	6.3374	1.61	Q				V
17+35	6.3486	1.63	Q				V
17+40	6.3598	1.64	Q				V
17+45	6.3712	1.65	Q				V
17+50	6.3823	1.61	Q				V
17+55	6.3925	1.48	Q				V
18+ 0	6.4022	1.41	Q				V
18+ 5	6.4117	1.38	Q				V
18+10	6.4211	1.36	Q				V
18+15	6.4304	1.35	Q				V
18+20	6.4396	1.34	Q				V
18+25	6.4488	1.34	Q				V
18+30	6.4580	1.33	Q				V
18+35	6.4669	1.29	Q				V
18+40	6.4748	1.15	Q				V
18+45	6.4823	1.08	Q				V
18+50	6.4892	1.01	Q				V
18+55	6.4951	0.85	Q				V
19+ 0	6.5004	0.77	Q				V
19+ 5	6.5057	0.77	Q				V
19+10	6.5118	0.89	Q				V
19+15	6.5183	0.94	Q				V
19+20	6.5252	1.00	Q				V
19+25	6.5331	1.15	Q				V
19+30	6.5415	1.23	Q				V
19+35	6.5500	1.22	Q				V
19+40	6.5576	1.10	Q				V
19+45	6.5648	1.05	Q				V
19+50	6.5716	0.99	Q				V
19+55	6.5774	0.84	Q				V
20+ 0	6.5827	0.76	Q				V
20+ 5	6.5880	0.77	Q				V
20+10	6.5941	0.89	Q				V
20+15	6.6006	0.94	Q				V
20+20	6.6072	0.96	Q				V
20+25	6.6139	0.97	Q				V
20+30	6.6206	0.98	Q				V
20+35	6.6274	0.98	Q				V
20+40	6.6341	0.98	Q				V
20+45	6.6409	0.99	Q				V
20+50	6.6475	0.95	Q				V
20+55	6.6532	0.82	Q				V

21+ 0	6.6583	0.75	|Q	|	|	|	V |
21+ 5	6.6635	0.75	|Q	|	|	|	V |
21+10	6.6695	0.88	|Q	|	|	|	V |
21+15	6.6760	0.94	|Q	|	|	|	V |
21+20	6.6823	0.92	|Q	|	|	|	V |
21+25	6.6878	0.79	|Q	|	|	|	V|
21+30	6.6928	0.73	|Q	|	|	|	V|
21+35	6.6979	0.74	|Q	|	|	|	V|
21+40	6.7039	0.87	|Q	|	|	|	V|
21+45	6.7103	0.93	|Q	|	|	|	V|
21+50	6.7166	0.92	|Q	|	|	|	V|
21+55	6.7220	0.79	|Q	|	|	|	V|
22+ 0	6.7271	0.73	|Q	|	|	|	V|
22+ 5	6.7322	0.74	|Q	|	|	|	V|
22+10	6.7381	0.87	|Q	|	|	|	V|
22+15	6.7445	0.93	|Q	|	|	|	V|
22+20	6.7508	0.92	|Q	|	|	|	V|
22+25	6.7563	0.79	|Q	|	|	|	V|
22+30	6.7613	0.73	|Q	|	|	|	V|
22+35	6.7662	0.70	|Q	|	|	|	V|
22+40	6.7709	0.69	|Q	|	|	|	V|
22+45	6.7756	0.68	|Q	|	|	|	V|
22+50	6.7803	0.68	|Q	|	|	|	V|
22+55	6.7849	0.67	|Q	|	|	|	V|
23+ 0	6.7895	0.67	|Q	|	|	|	V|
23+ 5	6.7941	0.67	|Q	|	|	|	V|
23+10	6.7987	0.66	|Q	|	|	|	V|
23+15	6.8032	0.66	|Q	|	|	|	V|
23+20	6.8078	0.66	|Q	|	|	|	V|
23+25	6.8124	0.66	|Q	|	|	|	V|
23+30	6.8169	0.66	|Q	|	|	|	V|
23+35	6.8215	0.66	|Q	|	|	|	V|
23+40	6.8261	0.66	|Q	|	|	|	V|
23+45	6.8307	0.66	|Q	|	|	|	V|
23+50	6.8352	0.66	|Q	|	|	|	V|
23+55	6.8398	0.66	|Q	|	|	|	V|
24+ 0	6.8444	0.66	|Q	|	|	|	V|
24+ 5	6.8484	0.59	|Q	|	|	|	V|
24+10	6.8505	0.31	Q	|	|	|	V|
24+15	6.8517	0.16	Q	|	|	|	V|
24+20	6.8524	0.11	Q	|	|	|	V|
24+25	6.8529	0.07	Q	|	|	|	V|
24+30	6.8532	0.05	Q	|	|	|	V|
24+35	6.8534	0.03	Q	|	|	|	V|
24+40	6.8536	0.02	Q	|	|	|	V|
24+45	6.8537	0.01	Q	|	|	|	V|
24+50	6.8537	0.01	Q	|	|	|	V|

ALBERT A. WEBB ASSOCIATES

Basin Stage-Storage-Outflow Table
21-0026 - Core5 Menifee Commerce Center
Building 1 Basin

			Pumped Flowate	2-Year 24 Hour Orifice		100-year Basin Outlet	
Bottom Elevation:	1424			EX. Q2-YR, 24-HR	5.1	Peak Q-100-YR	132.5
Bottom Length:	1300	FT		Opening (IN)	4	Length (FT)	6
Bottom Width:	16	FT		Opening (FT)	0.333	C	3
Bottom Slope:	0.1	%	Pump Q (cfs)	AREA (SF)	0.087		
Side Slope:	2	:1	2.5	# of Orifices	4		
				Total Area (SF)	0.349		
				G (FT/s^2)	32.2		
				Cd	0.66		
				Invert H (FT)	1429.9	Weir Crest	1431

#	Elevation (FT)	Depth (FT)	Storage (AC-FT)	Q (CFS)	h (FT)	Q* (CFS)	h (FT)	Q** (CFS)	Qtotal (CFS)
1.00	1,424.00	0.00	0.000	0.000	0.000	0.000	0.00	0.000	0.000
2.00	1,424.10	0.10	0.001	2.500	0.000	0.000	0.00	0.000	2.500
3.00	1,424.50	0.50	0.046	2.500	0.000	0.000	0.00	0.000	2.500
4.00	1,425.00	1.00	0.190	2.500	0.000	0.000	0.00	0.000	2.500
5.00	1,426.00	2.00	0.690	2.500	0.000	0.000	0.00	0.000	2.500
6.00	1,427.00	3.00	1.268	2.500	0.000	0.000	0.00	0.000	2.500
7.00	1,428.00	4.00	1.911	2.500	0.000	0.000	0.00	0.000	2.500
8.00	1,429.00	5.00	2.620	2.500	0.000	0.000	0.00	0.000	2.500
9.00	1,430.00	6.00	3.396	2.500	0.000	0.000	0.00	0.000	2.500
10.00	1,430.50	6.50	3.809	2.500	0.433	1.217	0.00	0.000	3.717
11.00	1,431.10	7.10	4.327	2.500	1.033	1.879	0.10	0.569	4.949
12.00	1,431.50	7.50	4.686	2.500	1.433	2.213	0.50	6.364	11.077
13.00	1,432.00	8.00	5.149	2.500	1.933	2.571	1.00	18.000	23.071

*Q determined using orifice equation, Q=CA(2gh)^0.5

**Q determined using weir equation, Q=CL(h)^3/2

FLOOD HYDROGRAPH ROUTING PROGRAM

Study date: 08/05/21

21-0026 - MENIFEE COMMERCE CENTER
BASIN ROUTING CALCULATIONS
2-YEAR, 24-HOUR STORM EVENT: BUILDING 1
FN: ROUTE242.OUT TSW

Program License Serial Number 4010

********** HYDROGRAPH INFORMATION **********

From study/file name: ONSITEPROP242.rte

**********HYDROGRAPH DATA**********

Number of intervals = 298
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 11.152 (CFS)
Total volume = 6.854 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

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Process from Point/Station 1.000 to Point/Station 2.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 298
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)

0.000	0.000	0.000	0.000	0.000
0.100	0.001	2.500	-0.008	0.010
0.500	0.046	2.500	0.037	0.055
1.000	0.190	2.500	0.181	0.199
2.000	0.690	2.500	0.681	0.699
3.000	1.268	2.500	1.259	1.277
4.000	1.911	2.500	1.902	1.920
5.000	2.620	2.500	2.611	2.629
6.000	3.396	2.500	3.387	3.405
6.500	3.809	3.717	3.796	3.822
7.100	4.327	4.949	4.310	4.344
7.500	4.686	11.077	4.648	4.724
8.000	5.149	23.071	5.070	5.228

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0 2.8 5.58 8.36 11.15	Depth (Ft.)
0.083	0.08	0.07	0.000	O | | | |	0.00
0.167	0.35	0.33	0.000	OI | | | |	0.01
0.250	0.50	0.50	0.000	|O | | | |	0.02
0.333	0.60	0.58	0.000	|O | | | |	0.02
0.417	0.77	0.76	0.000	| O | | | |	0.03
0.500	0.86	0.86	0.000	| O | | | |	0.03
0.583	0.91	0.91	0.000	| O | | | |	0.04
0.667	0.94	0.94	0.000	| O | | | |	0.04
0.750	0.96	0.96	0.000	| O | | | |	0.04
0.833	1.01	1.01	0.000	| O | | | |	0.04
0.917	1.16	1.15	0.000	| O | | | |	0.05
1.000	1.24	1.24	0.000	| O | | | |	0.05
1.083	1.23	1.23	0.000	| O | | | |	0.05
1.167	1.11	1.13	0.000	| O | | | |	0.05
1.250	1.05	1.05	0.000	| O | | | |	0.04
1.333	1.03	1.04	0.000	| O | | | |	0.04
1.417	1.02	1.02	0.000	| O | | | |	0.04
1.500	1.01	1.02	0.000	| O | | | |	0.04
1.583	1.01	1.01	0.000	| O | | | |	0.04
1.667	1.01	1.01	0.000	| O | | | |	0.04
1.750	1.00	1.00	0.000	| O | | | |	0.04
1.833	1.04	1.03	0.000	| O | | | |	0.04
1.917	1.17	1.16	0.000	| O | | | |	0.05
2.000	1.24	1.25	0.000	| O | | | |	0.05
2.083	1.27	1.27	0.001	| O | | | |	0.05
2.167	1.29	1.29	0.001	| O | | | |	0.05
2.250	1.30	1.30	0.001	| O | | | |	0.05
2.333	1.31	1.31	0.001	| O | | | |	0.05
2.417	1.32	1.31	0.001	| O | | | |	0.05
2.500	1.32	1.32	0.001	| O | | | |	0.05
2.583	1.36	1.36	0.001	| O | | | |	0.05
2.667	1.50	1.49	0.001	| O | | | |	0.06
2.750	1.58	1.58	0.001	| O | | | |	0.06
2.833	1.61	1.60	0.001	| O | | | |	0.06
2.917	1.62	1.62	0.001	| O | | | |	0.06

3.000	1.63	1.63	0.001	O				0.07
3.083	1.64	1.64	0.001	O				0.07
3.167	1.65	1.65	0.001	O				0.07
3.250	1.65	1.65	0.001	O				0.07
3.333	1.66	1.65	0.001	O				0.07
3.417	1.66	1.66	0.001	O				0.07
3.500	1.66	1.66	0.001	O				0.07
3.583	1.66	1.66	0.001	O				0.07
3.667	1.66	1.66	0.001	O				0.07
3.750	1.66	1.66	0.001	O				0.07
3.833	1.70	1.69	0.001	O				0.07
3.917	1.84	1.82	0.001	O				0.07
4.000	1.91	1.91	0.001	O				0.08
4.083	1.94	1.93	0.001	O				0.08
4.167	1.95	1.96	0.001	O				0.08
4.250	1.97	1.96	0.001	O				0.08
4.333	2.01	2.01	0.001	O				0.08
4.417	2.16	2.14	0.001	O				0.09
4.500	2.23	2.24	0.001	O				0.09
4.583	2.27	2.26	0.001	O				0.09
4.667	2.29	2.29	0.001	O				0.09
4.750	2.30	2.30	0.001	O				0.09
4.833	2.34	2.34	0.001	O				0.09
4.917	2.49	2.48	0.001	O				0.10
5.000	2.57	2.50	0.001	O				0.10
5.083	2.52	2.50	0.002	O				0.10
5.167	2.26	2.45	0.001	IO				0.10
5.250	2.13	2.00	0.001	OI				0.08
5.333	2.12	2.23	0.001	O				0.09
5.417	2.23	2.13	0.001	O				0.09
5.500	2.28	2.35	0.001	O				0.09
5.583	2.34	2.27	0.001	O				0.09
5.667	2.48	2.50	0.001	O				0.10
5.750	2.56	2.50	0.001	O				0.10
5.833	2.59	2.50	0.002	O				0.11
5.917	2.61	2.50	0.002	O				0.11
6.000	2.62	2.50	0.003	O				0.12
6.083	2.67	2.50	0.004	O				0.13
6.167	2.82	2.50	0.006	OI				0.14
6.250	2.90	2.50	0.008	OI				0.17
6.333	2.93	2.50	0.011	OI				0.19
6.417	2.95	2.50	0.014	OI				0.22
6.500	2.96	2.50	0.017	OI				0.25
6.583	3.01	2.50	0.021	OI				0.28
6.667	3.15	2.50	0.025	O	I			0.31
6.750	3.23	2.50	0.029	O	I			0.35
6.833	3.26	2.50	0.035	O	I			0.40
6.917	3.28	2.50	0.040	O	I			0.45
7.000	3.29	2.50	0.045	O	I			0.49
7.083	3.30	2.50	0.051	O	I			0.52
7.167	3.31	2.50	0.056	O	I			0.54
7.250	3.31	2.50	0.062	O	I			0.56
7.333	3.35	2.50	0.068	O	I			0.58
7.417	3.49	2.50	0.074	O		I		0.60
7.500	3.57	2.50	0.081	O		I		0.62
7.583	3.63	2.50	0.089	O		I		0.65

7.667	3.79	2.50	0.097	O	I			0.68
7.750	3.87	2.50	0.106	O	I			0.71
7.833	3.95	2.50	0.116	O	I			0.74
7.917	4.11	2.50	0.127	O	I			0.78
8.000	4.20	2.50	0.138	O	I			0.82
8.083	4.32	2.50	0.150	O	I			0.86
8.167	4.62	2.50	0.164	O	I			0.91
8.250	4.78	2.50	0.179	O	I			0.96
8.333	4.85	2.50	0.195	O	I			1.01
8.417	4.89	2.50	0.211	O	I			1.04
8.500	4.92	2.50	0.228	O	I			1.08
8.583	4.98	2.50	0.244	O	I			1.11
8.667	5.13	2.50	0.262	O	I			1.14
8.750	5.21	2.50	0.280	O	I			1.18
8.833	5.29	2.50	0.299	O	I			1.22
8.917	5.45	2.50	0.319	O	I			1.26
9.000	5.53	2.50	0.340	O	I			1.30
9.083	5.65	2.50	0.361	O	I			1.34
9.167	5.95	2.50	0.384	O	I			1.39
9.250	6.11	2.50	0.408	O	I			1.44
9.333	6.21	2.50	0.433	O	I			1.49
9.417	6.40	2.50	0.459	O	I			1.54
9.500	6.50	2.50	0.487	O	I			1.59
9.583	6.58	2.50	0.514	O	I			1.65
9.667	6.75	2.50	0.543	O	I			1.71
9.750	6.85	2.50	0.573	O	I			1.77
9.833	6.93	2.50	0.603	O	I			1.83
9.917	7.10	2.50	0.634	O	I			1.89
10.000	7.19	2.50	0.666	O	I			1.95
10.083	6.96	2.50	0.698	O	I			2.01
10.167	6.01	2.50	0.725	O	I			2.06
10.250	5.52	2.50	0.748	O	I			2.10
10.333	5.33	2.50	0.768	O	I			2.13
10.417	5.21	2.50	0.787	O	I			2.17
10.500	5.14	2.50	0.805	O	I			2.20
10.583	5.28	2.50	0.824	O	I			2.23
10.667	5.93	2.50	0.845	O	I			2.27
10.750	6.27	2.50	0.870	O	I			2.31
10.833	6.39	2.50	0.896	O	I			2.36
10.917	6.46	2.50	0.923	O	I			2.40
11.000	6.51	2.50	0.951	O	I			2.45
11.083	6.51	2.50	0.978	O	I			2.50
11.167	6.41	2.50	1.006	O	I			2.55
11.250	6.35	2.50	1.032	O	I			2.59
11.333	6.34	2.50	1.059	O	I			2.64
11.417	6.34	2.50	1.085	O	I			2.68
11.500	6.33	2.50	1.112	O	I			2.73
11.583	6.24	2.50	1.138	O	I			2.77
11.667	5.96	2.50	1.163	O	I			2.82
11.750	5.81	2.50	1.186	O	I			2.86
11.833	5.79	2.50	1.209	O	I			2.90
11.917	5.89	2.50	1.232	O	I			2.94
12.000	5.94	2.50	1.255	O	I			2.98
12.083	6.22	2.50	1.280	O	I			3.02
12.167	7.19	2.50	1.309	O	I			3.06
12.250	7.71	2.50	1.343	O	I			3.12

12.333	7.95	2.50	1.380	| O|	|	I |	|	3.17
12.417	8.21	2.50	1.418	| O|	|	I|	|	3.23
12.500	8.37	2.50	1.458	| O|	|	I	|	3.30
12.583	8.53	2.50	1.499	| O|	|	I	|	3.36
12.667	8.87	2.50	1.542	| O|	|	|I	|	3.43
12.750	9.06	2.50	1.586	| O|	|	|I	|	3.49
12.833	9.18	2.50	1.632	| O|	|	| I	|	3.57
12.917	9.38	2.50	1.678	| O|	|	| I	|	3.64
13.000	9.48	2.50	1.726	| O|	|	| I	|	3.71
13.083	9.72	2.50	1.775	| O|	|	| I	|	3.79
13.167	10.45	2.50	1.827	| O|	|	| I	|	3.87
13.250	10.83	2.50	1.883	| O|	|	| I|		3.96
13.333	10.99	2.50	1.941	| O|	|	| I|		4.04
13.417	11.09	2.50	2.000	| O|	|	| I|		4.13
13.500	11.15	2.50	2.059	| O|	|	| I		4.21
13.583	10.77	2.50	2.118	| O|	|	| I |		4.29
13.667	9.28	2.50	2.170	| O|	|	| I	|	4.36
13.750	8.50	2.50	2.214	| O|	|	I	|	4.43
13.833	8.20	2.50	2.254	| O|	|	I|	|	4.48
13.917	8.02	2.50	2.292	| O|	|	I|	|	4.54
14.000	7.89	2.50	2.330	| O|	|	I |	|	4.59
14.083	7.96	2.50	2.367	| O|	|	I |	|	4.64
14.167	8.45	2.50	2.407	| O|	|	I	|	4.70
14.250	8.70	2.50	2.449	| O|	|	I	|	4.76
14.333	8.74	2.50	2.491	| O|	|	|I	|	4.82
14.417	8.64	2.50	2.534	| O|	|	I	|	4.88
14.500	8.61	2.50	2.576	| O|	|	I	|	4.94
14.583	8.61	2.50	2.618	| O|	|	I	|	5.00
14.667	8.62	2.50	2.660	| O|	|	I	|	5.05
14.750	8.62	2.50	2.703	| O|	|	I	|	5.11
14.833	8.59	2.50	2.745	| O|	|	I	|	5.16
14.917	8.46	2.50	2.786	| O|	|	I	|	5.21
15.000	8.38	2.50	2.827	| O|	|	I	|	5.27
15.083	8.31	2.50	2.867	| O|	|	I|	|	5.32
15.167	8.15	2.50	2.907	| O|	|	I|	|	5.37
15.250	8.07	2.50	2.945	| O|	|	I|	|	5.42
15.333	7.99	2.50	2.983	| O|	|	I |	|	5.47
15.417	7.83	2.50	3.021	| O|	|	I |	|	5.52
15.500	7.74	2.50	3.057	| O|	|	I |	|	5.56
15.583	7.55	2.50	3.092	| O|	|	I |	|	5.61
15.667	6.97	2.50	3.125	| O|	| I |	|	5.65
15.750	6.66	2.50	3.155	| O|	| I |	|	5.69
15.833	6.53	2.50	3.183	| O|	| I |	|	5.73
15.917	6.46	2.50	3.211	| O|	| I |	|	5.76
16.000	6.41	2.50	3.238	| O|	| I |	|	5.80
16.083	5.80	2.50	3.263	| O|	I |	|	5.83
16.167	3.69	2.50	3.278	| O| I	|	|	5.85
16.250	2.58	2.50	3.282	| O|	|	|	5.85
16.333	2.14	2.50	3.281	| IO|	|	|	5.85
16.417	1.86	2.50	3.278	| I O|	|	|	5.85
16.500	1.69	2.50	3.273	| I O|	|	|	5.84
16.583	1.53	2.50	3.267	| I O|	|	|	5.83
16.667	1.31	2.50	3.259	| I O|	|	|	5.82
16.750	1.17	2.50	3.251	| I O|	|	|	5.81
16.833	1.10	2.50	3.241	| I O|	|	|	5.80
16.917	1.03	2.50	3.231	| I O|	|	|	5.79

17.000	1.02	2.50	3.221	I O				5.77
17.083	1.09	2.50	3.211	I O				5.76
17.167	1.36	2.50	3.203	I O				5.75
17.250	1.50	2.50	3.195	I O				5.74
17.333	1.56	2.50	3.189	I O				5.73
17.417	1.59	2.50	3.182	I O				5.72
17.500	1.61	2.50	3.176	I O				5.72
17.583	1.63	2.50	3.170	I O				5.71
17.667	1.64	2.50	3.164	I O				5.70
17.750	1.65	2.50	3.158	I O				5.69
17.833	1.61	2.50	3.152	I O				5.69
17.917	1.48	2.50	3.145	I O				5.68
18.000	1.41	2.50	3.138	I O				5.67
18.083	1.38	2.50	3.131	I O				5.66
18.167	1.36	2.50	3.123	I O				5.65
18.250	1.35	2.50	3.115	I O				5.64
18.333	1.34	2.50	3.107	I O				5.63
18.417	1.34	2.50	3.099	I O				5.62
18.500	1.33	2.50	3.091	I O				5.61
18.583	1.29	2.50	3.083	I O				5.60
18.667	1.15	2.50	3.074	I O				5.58
18.750	1.08	2.50	3.064	I O				5.57
18.833	1.01	2.50	3.054	I O				5.56
18.917	0.85	2.50	3.044	I O				5.55
19.000	0.77	2.50	3.032	I O				5.53
19.083	0.77	2.50	3.020	I O				5.52
19.167	0.89	2.50	3.009	I O				5.50
19.250	0.94	2.50	2.998	I O				5.49
19.333	1.00	2.50	2.987	I O				5.47
19.417	1.15	2.50	2.977	I O				5.46
19.500	1.23	2.50	2.968	I O				5.45
19.583	1.22	2.50	2.959	I O				5.44
19.667	1.10	2.50	2.950	I O				5.43
19.750	1.05	2.50	2.940	I O				5.41
19.833	0.99	2.50	2.930	I O				5.40
19.917	0.84	2.50	2.919	I O				5.39
20.000	0.76	2.50	2.908	I O				5.37
20.083	0.77	2.50	2.896	I O				5.36
20.167	0.89	2.50	2.884	I O				5.34
20.250	0.94	2.50	2.873	I O				5.33
20.333	0.96	2.50	2.863	I O				5.31
20.417	0.97	2.50	2.852	I O				5.30
20.500	0.98	2.50	2.841	I O				5.29
20.583	0.98	2.50	2.831	I O				5.27
20.667	0.98	2.50	2.821	I O				5.26
20.750	0.99	2.50	2.810	I O				5.25
20.833	0.95	2.50	2.800	I O				5.23
20.917	0.82	2.50	2.789	I O				5.22
21.000	0.75	2.50	2.777	I O				5.20
21.083	0.75	2.50	2.765	I O				5.19
21.167	0.88	2.50	2.753	I O				5.17
21.250	0.94	2.50	2.742	I O				5.16
21.333	0.92	2.50	2.731	I O				5.14
21.417	0.79	2.50	2.720	I O				5.13
21.500	0.73	2.50	2.708	I O				5.11
21.583	0.74	2.50	2.696	I O				5.10

21.667	0.87	2.50	2.684	| I	O|	|	|	5.08
21.750	0.93	2.50	2.673	| I	O|	|	|	5.07
21.833	0.92	2.50	2.662	| I	O|	|	|	5.05
21.917	0.79	2.50	2.651	| I	O|	|	|	5.04
22.000	0.73	2.50	2.639	| I	O|	|	|	5.02
22.083	0.74	2.50	2.627	| I	O|	|	|	5.01
22.167	0.87	2.50	2.615	| I	O|	|	|	4.99
22.250	0.93	2.50	2.604	| I	O|	|	|	4.98
22.333	0.92	2.50	2.593	| I	O|	|	|	4.96
22.417	0.79	2.50	2.582	| I	O|	|	|	4.95
22.500	0.73	2.50	2.570	| I	O|	|	|	4.93
22.583	0.70	2.50	2.558	| I	O|	|	|	4.91
22.667	0.69	2.50	2.545	|I	O|	|	|	4.89
22.750	0.68	2.50	2.533	|I	O|	|	|	4.88
22.833	0.68	2.50	2.520	|I	O|	|	|	4.86
22.917	0.67	2.50	2.508	|I	O|	|	|	4.84
23.000	0.67	2.50	2.495	|I	O|	|	|	4.82
23.083	0.67	2.50	2.482	|I	O|	|	|	4.81
23.167	0.66	2.50	2.470	|I	O|	|	|	4.79
23.250	0.66	2.50	2.457	|I	O|	|	|	4.77
23.333	0.66	2.50	2.444	|I	O|	|	|	4.75
23.417	0.66	2.50	2.432	|I	O|	|	|	4.73
23.500	0.66	2.50	2.419	|I	O|	|	|	4.72
23.583	0.66	2.50	2.406	|I	O|	|	|	4.70
23.667	0.66	2.50	2.394	|I	O|	|	|	4.68
23.750	0.66	2.50	2.381	|I	O|	|	|	4.66
23.833	0.66	2.50	2.368	|I	O|	|	|	4.65
23.917	0.66	2.50	2.356	|I	O|	|	|	4.63
24.000	0.66	2.50	2.343	|I	O|	|	|	4.61
24.083	0.59	2.50	2.330	|I	O|	|	|	4.59
24.167	0.31	2.50	2.316	I	O|	|	|	4.57
24.250	0.16	2.50	2.301	I	O|	|	|	4.55
24.333	0.11	2.50	2.284	I	O|	|	|	4.53
24.417	0.07	2.50	2.268	I	O|	|	|	4.50
24.500	0.05	2.50	2.251	I	O|	|	|	4.48
24.583	0.03	2.50	2.234	I	O|	|	|	4.46
24.667	0.02	2.50	2.217	I	O|	|	|	4.43
24.750	0.01	2.50	2.200	I	O|	|	|	4.41
24.833	0.01	2.50	2.183	I	O|	|	|	4.38
24.917	0.00	2.50	2.165	I	O|	|	|	4.36
25.000	0.00	2.50	2.148	I	O|	|	|	4.33
25.083	0.00	2.50	2.131	I	O|	|	|	4.31
25.167	0.00	2.50	2.114	I	O|	|	|	4.29
25.250	0.00	2.50	2.097	I	O|	|	|	4.26
25.333	0.00	2.50	2.079	I	O|	|	|	4.24
25.417	0.00	2.50	2.062	I	O|	|	|	4.21
25.500	0.00	2.50	2.045	I	O|	|	|	4.19
25.583	0.00	2.50	2.028	I	O|	|	|	4.16
25.667	0.00	2.50	2.010	I	O|	|	|	4.14
25.750	0.00	2.50	1.993	I	O|	|	|	4.12
25.833	0.00	2.50	1.976	I	O|	|	|	4.09
25.917	0.00	2.50	1.959	I	O|	|	|	4.07
26.000	0.00	2.50	1.942	I	O|	|	|	4.04
26.083	0.00	2.50	1.924	I	O|	|	|	4.02
26.167	0.00	2.50	1.907	I	O|	|	|	3.99
26.250	0.00	2.50	1.890	I	O|	|	|	3.97

26.333	0.00	2.50	1.873	I	O				3.94
26.417	0.00	2.50	1.856	I	O				3.91
26.500	0.00	2.50	1.838	I	O				3.89
26.583	0.00	2.50	1.821	I	O				3.86
26.667	0.00	2.50	1.804	I	O				3.83
26.750	0.00	2.50	1.787	I	O				3.81
26.833	0.00	2.50	1.769	I	O				3.78
26.917	0.00	2.50	1.752	I	O				3.75
27.000	0.00	2.50	1.735	I	O				3.73
27.083	0.00	2.50	1.718	I	O				3.70
27.167	0.00	2.50	1.701	I	O				3.67
27.250	0.00	2.50	1.683	I	O				3.65
27.333	0.00	2.50	1.666	I	O				3.62
27.417	0.00	2.50	1.649	I	O				3.59
27.500	0.00	2.50	1.632	I	O				3.57
27.583	0.00	2.50	1.614	I	O				3.54
27.667	0.00	2.50	1.597	I	O				3.51
27.750	0.00	2.50	1.580	I	O				3.49
27.833	0.00	2.50	1.563	I	O				3.46
27.917	0.00	2.50	1.546	I	O				3.43
28.000	0.00	2.50	1.528	I	O				3.40
28.083	0.00	2.50	1.511	I	O				3.38
28.167	0.00	2.50	1.494	I	O				3.35
28.250	0.00	2.50	1.477	I	O				3.32
28.333	0.00	2.50	1.460	I	O				3.30
28.417	0.00	2.50	1.442	I	O				3.27
28.500	0.00	2.50	1.425	I	O				3.24
28.583	0.00	2.50	1.408	I	O				3.22
28.667	0.00	2.50	1.391	I	O				3.19
28.750	0.00	2.50	1.373	I	O				3.16
28.833	0.00	2.50	1.356	I	O				3.14
28.917	0.00	2.50	1.339	I	O				3.11
29.000	0.00	2.50	1.322	I	O				3.08
29.083	0.00	2.50	1.305	I	O				3.06
29.167	0.00	2.50	1.287	I	O				3.03
29.250	0.00	2.50	1.270	I	O				3.00
29.333	0.00	2.50	1.253	I	O				2.97
29.417	0.00	2.50	1.236	I	O				2.94
29.500	0.00	2.50	1.218	I	O				2.91
29.583	0.00	2.50	1.201	I	O				2.88
29.667	0.00	2.50	1.184	I	O				2.85
29.750	0.00	2.50	1.167	I	O				2.82
29.833	0.00	2.50	1.150	I	O				2.80
29.917	0.00	2.50	1.132	I	O				2.77
30.000	0.00	2.50	1.115	I	O				2.74
30.083	0.00	2.50	1.098	I	O				2.71
30.167	0.00	2.50	1.081	I	O				2.68
30.250	0.00	2.50	1.064	I	O				2.65
30.333	0.00	2.50	1.046	I	O				2.62
30.417	0.00	2.50	1.029	I	O				2.59
30.500	0.00	2.50	1.012	I	O				2.56
30.583	0.00	2.50	0.995	I	O				2.53
30.667	0.00	2.50	0.977	I	O				2.50
30.750	0.00	2.50	0.960	I	O				2.47
30.833	0.00	2.50	0.943	I	O				2.44
30.917	0.00	2.50	0.926	I	O				2.41

31.000	0.00	2.50	0.909	I	O	|	|	|	2.38
31.083	0.00	2.50	0.891	I	O	|	|	|	2.35
31.167	0.00	2.50	0.874	I	O	|	|	|	2.32
31.250	0.00	2.50	0.857	I	O	|	|	|	2.29
31.333	0.00	2.50	0.840	I	O	|	|	|	2.26
31.417	0.00	2.50	0.822	I	O	|	|	|	2.23
31.500	0.00	2.50	0.805	I	O	|	|	|	2.20
31.583	0.00	2.50	0.788	I	O	|	|	|	2.17
31.667	0.00	2.50	0.771	I	O	|	|	|	2.14
31.750	0.00	2.50	0.754	I	O	|	|	|	2.11
31.833	0.00	2.50	0.736	I	O	|	|	|	2.08
31.917	0.00	2.50	0.719	I	O	|	|	|	2.05
32.000	0.00	2.50	0.702	I	O	|	|	|	2.02
32.083	0.00	2.50	0.685	I	O	|	|	|	1.99
32.167	0.00	2.50	0.668	I	O	|	|	|	1.96
32.250	0.00	2.50	0.650	I	O	|	|	|	1.92
32.333	0.00	2.50	0.633	I	O	|	|	|	1.89
32.417	0.00	2.50	0.616	I	O	|	|	|	1.85
32.500	0.00	2.50	0.599	I	O	|	|	|	1.82
32.583	0.00	2.50	0.581	I	O	|	|	|	1.78
32.667	0.00	2.50	0.564	I	O	|	|	|	1.75
32.750	0.00	2.50	0.547	I	O	|	|	|	1.71
32.833	0.00	2.50	0.530	I	O	|	|	|	1.68
32.917	0.00	2.50	0.513	I	O	|	|	|	1.65
33.000	0.00	2.50	0.495	I	O	|	|	|	1.61
33.083	0.00	2.50	0.478	I	O	|	|	|	1.58
33.167	0.00	2.50	0.461	I	O	|	|	|	1.54
33.250	0.00	2.50	0.444	I	O	|	|	|	1.51
33.333	0.00	2.50	0.426	I	O	|	|	|	1.47
33.417	0.00	2.50	0.409	I	O	|	|	|	1.44
33.500	0.00	2.50	0.392	I	O	|	|	|	1.40
33.583	0.00	2.50	0.375	I	O	|	|	|	1.37
33.667	0.00	2.50	0.358	I	O	|	|	|	1.34
33.750	0.00	2.50	0.340	I	O	|	|	|	1.30
33.833	0.00	2.50	0.323	I	O	|	|	|	1.27
33.917	0.00	2.50	0.306	I	O	|	|	|	1.23
34.000	0.00	2.50	0.289	I	O	|	|	|	1.20
34.083	0.00	2.50	0.272	I	O	|	|	|	1.16
34.167	0.00	2.50	0.254	I	O	|	|	|	1.13
34.250	0.00	2.50	0.237	I	O	|	|	|	1.09
34.333	0.00	2.50	0.220	I	O	|	|	|	1.06
34.417	0.00	2.50	0.203	I	O	|	|	|	1.03
34.500	0.00	2.50	0.185	I	O	|	|	|	0.98
34.583	0.00	2.50	0.168	I	O	|	|	|	0.92
34.667	0.00	2.50	0.151	I	O	|	|	|	0.86
34.750	0.00	2.50	0.134	I	O	|	|	|	0.80
34.833	0.00	2.50	0.117	I	O	|	|	|	0.74
34.917	0.00	2.50	0.099	I	O	|	|	|	0.69
35.000	0.00	2.50	0.082	I	O	|	|	|	0.63
35.083	0.00	2.50	0.065	I	O	|	|	|	0.57
35.167	0.00	2.50	0.048	I	O	|	|	|	0.51
35.250	0.00	2.50	0.030	I	O	|	|	|	0.36
35.333	0.00	2.50	0.013	I	O	|	|	|	0.21
35.417	0.00	1.21	0.000	I	O	|	|	|	0.05
35.500	0.00	0.00	0.000	O		|	|	|	0.00

```
**************************HYDROGRAPH DATA**************************
                Number of intervals =   426
                Time interval =    5.0 (Min.)
                Maximum/Peak flow rate =        2.500 (CFS)
                Total volume =       6.857 (Ac.Ft)
        Status of hydrographs being held in storage
                   Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
        Peak (CFS)      0.000     0.000     0.000     0.000     0.000
        Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
*******************************************************************

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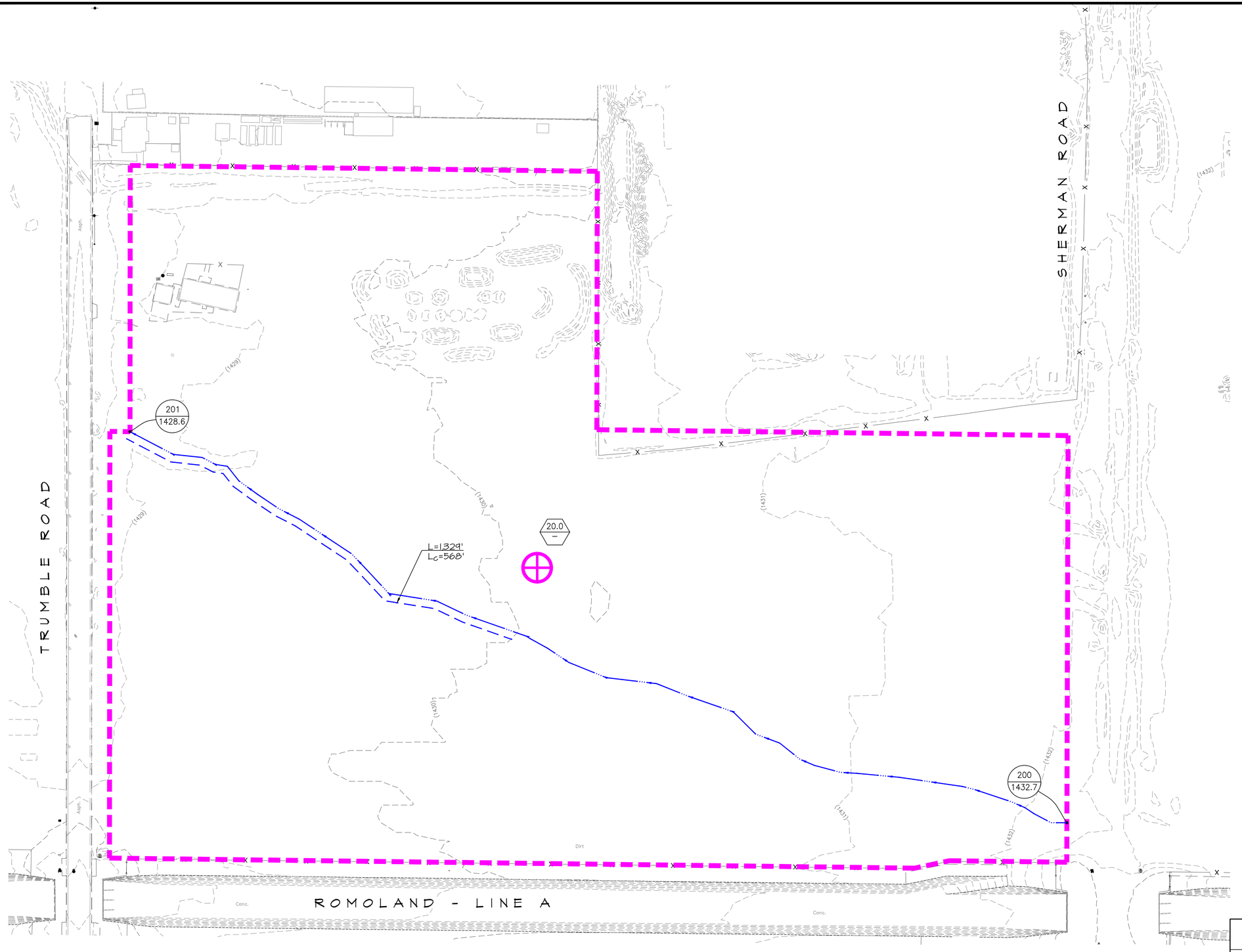

LEGEND

- DRAINAGE MANAGEMENT BOUNDARY
- FLOW DIRECTION
- L=14XX' / Lc=1000' — LONGEST FLOW PATH CENTROIDAL LENGTH
- 101 / 14xx — NODE DESIGNATION / NODE ELEVATION
- 5.0 — WATERSHED AREA (ACRES)
- CENTROID

N W E S

1" = 60'

60 0 60 120 180

PRELIMINARY

CITY OF MENIFEE

UNIT HYDROGRAPH EXISTING CONDITION MENIFEE COMMERCE CENTER BUILDING 2

SCALE: 1"=60'	ALBERT A. WEBB ASSOCIATES — ENGINEERING CONSULTANTS, 3788 McCRAY STREET, RIVERSIDE CA. 92506, PH. (951) 686-1070, FAX (951) 788-1256	W.O. 21-0026
DATE: MAY 2021		SHEET 3
DESIGNED:		OF 4 SHEETS
CHECKED:		
PLN CK REF:		DWG. NO.
F.B.		

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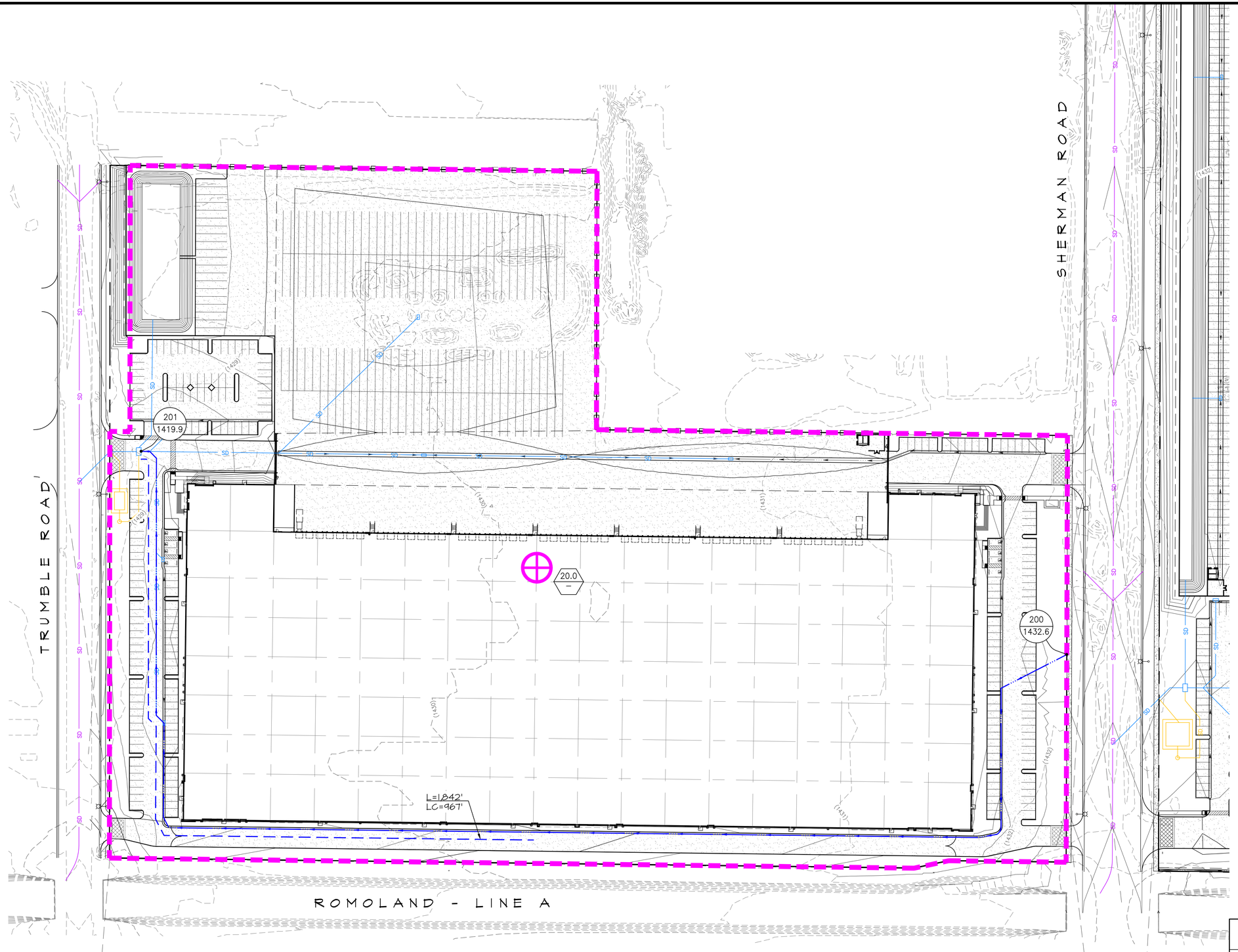

LEGEND

- DRAINAGE MANAGEMENT BOUNDARY
- FLOW DIRECTION
- L=14XX' / L_C=1000' — LONGEST FLOW PATH CENTROIDAL LENGTH
- 101 / 14xx — NODE DESIGNATION / NODE ELEVATION
- 5.0 / — — WATERSHED AREA (ACRES)
- CENTROID

N W E S

1" = 60'

60 0 60 120 180

PRELIMINARY

CITY OF MENIFEE

UNIT HYDROGRAPH
DEVELOPED CONDITION
MENIFEE COMMERCE CENTER
BUILDING 2

SCALE: 1"=60'	ALBERT A. WEBB ASSOCIATES	W.O. 21-0026
DATE: MAY 2021	ENGINEERING CONSULTANTS 3788 McCRAY STREET RIVERSIDE CA. 92506 PH. (951) 686-1070 FAX (951) 788-1256	SHEET 4 OF 4 SHEETS
DESIGNED:		
CHECKED:		DWG. NO.
PLN CK REF:		
F.B.		

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U n i t H y d r o g r a p h A n a l y s i s

Study date 05/03/21 File: ONSITEPRE242.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 4010

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

21-0026 - MENIFEE COMMERCE CENTER
ONSITE UNIT HYDROGRAPH ANALYSIS
EXISITNG CONDITION, 2-YEAR 24-HOUR: BUILDING 2
FN: ONSITEPRE242.OUT- TSW

Drainage Area = 20.00(Ac.) = 0.031 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 20.00(Ac.) = 0.031 Sq. Mi.
Length along longest watercourse = 1329.00(Ft.)
Length along longest watercourse measured to centroid = 568.00(Ft.)
Length along longest watercourse = 0.252 Mi.
Length along longest watercourse measured to centroid = 0.108 Mi.
Difference in elevation = 4.10(Ft.)
Slope along watercourse = 16.2889 Ft./Mi.
Average Manning's 'N' = 0.030
Lag time = 0.108 Hr.
Lag time = 6.45 Min.
25% of lag time = 1.61 Min.
40% of lag time = 2.58 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
20.00	2.04	40.80

100 YEAR Area rainfall data:

```
Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       20.00            5.33                 106.60

STORM EVENT (YEAR) =    2.00
Area Averaged 2-Year Rainfall =    2.040(In)
Area Averaged 100-Year Rainfall =    5.330(In)

Point rain (area averaged) =    2.040(In)
Areal adjustment factor =  100.00 %
Adjusted average point rain =    2.040(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
    20.000           86.00         0.000
 Total Area Entered =     20.00(Ac.)


RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
AMC2 AMC-1     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
86.0  71.6      0.343     0.000        0.343       1.000      0.343
                                                 Sum (F) =   0.343
Area averaged mean soil loss (F) (In/Hr) =  0.200
Minimum soil loss rate ((In/Hr)) =  0.100
(for 24 hour storm duration)
Note: User entry of the fm value
Note: User entry of the f value
Soil low loss rate (decimal) =   0.900
------------------------------------------------------------------------

               U n i t  H y d r o g r a p h
                      VALLEY S-Curve
------------------------------------------------------------------------
               Unit Hydrograph Data
------------------------------------------------------------------------
Unit time period   Time % of lag   Distribution   Unit Hydrograph
    (hrs)                          Graph %            (CFS)
------------------------------------------------------------------------
    1   0.083         77.510         12.612              2.542
    2   0.167        155.019         43.511              8.770
    3   0.250        232.529         20.676              4.168
    4   0.333        310.039          8.415              1.696
    5   0.417        387.548          5.067              1.021
    6   0.500        465.058          3.245              0.654
    7   0.583        542.568          2.294              0.462
    8   0.667        620.077          1.631              0.329
    9   0.750        697.587          1.113              0.224
   10   0.833        775.097          0.798              0.161
   11   0.917        852.606          0.637              0.128
                               Sum = 100.000   Sum=      20.156
------------------------------------------------------------------------

 The following loss rate calculations reflect use of the minimum calculated loss
 rate subtracted from the Storm Rain to produce the maximum Effective Rain value
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Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.016	(0.355)	0.015	0.002
2	0.17	0.07	0.016	(0.353)	0.015	0.002
3	0.25	0.07	0.016	(0.352)	0.015	0.002
4	0.33	0.10	0.024	(0.350)	0.022	0.002
5	0.42	0.10	0.024	(0.349)	0.022	0.002
6	0.50	0.10	0.024	(0.348)	0.022	0.002
7	0.58	0.10	0.024	(0.346)	0.022	0.002
8	0.67	0.10	0.024	(0.345)	0.022	0.002
9	0.75	0.10	0.024	(0.344)	0.022	0.002
10	0.83	0.13	0.033	(0.342)	0.029	0.003
11	0.92	0.13	0.033	(0.341)	0.029	0.003
12	1.00	0.13	0.033	(0.340)	0.029	0.003
13	1.08	0.10	0.024	(0.338)	0.022	0.002
14	1.17	0.10	0.024	(0.337)	0.022	0.002
15	1.25	0.10	0.024	(0.336)	0.022	0.002
16	1.33	0.10	0.024	(0.334)	0.022	0.002
17	1.42	0.10	0.024	(0.333)	0.022	0.002
18	1.50	0.10	0.024	(0.332)	0.022	0.002
19	1.58	0.10	0.024	(0.330)	0.022	0.002
20	1.67	0.10	0.024	(0.329)	0.022	0.002
21	1.75	0.10	0.024	(0.328)	0.022	0.002
22	1.83	0.13	0.033	(0.326)	0.029	0.003
23	1.92	0.13	0.033	(0.325)	0.029	0.003
24	2.00	0.13	0.033	(0.324)	0.029	0.003
25	2.08	0.13	0.033	(0.322)	0.029	0.003
26	2.17	0.13	0.033	(0.321)	0.029	0.003
27	2.25	0.13	0.033	(0.320)	0.029	0.003
28	2.33	0.13	0.033	(0.318)	0.029	0.003
29	2.42	0.13	0.033	(0.317)	0.029	0.003
30	2.50	0.13	0.033	(0.316)	0.029	0.003
31	2.58	0.17	0.041	(0.315)	0.037	0.004
32	2.67	0.17	0.041	(0.313)	0.037	0.004
33	2.75	0.17	0.041	(0.312)	0.037	0.004
34	2.83	0.17	0.041	(0.311)	0.037	0.004
35	2.92	0.17	0.041	(0.309)	0.037	0.004
36	3.00	0.17	0.041	(0.308)	0.037	0.004
37	3.08	0.17	0.041	(0.307)	0.037	0.004
38	3.17	0.17	0.041	(0.306)	0.037	0.004
39	3.25	0.17	0.041	(0.304)	0.037	0.004
40	3.33	0.17	0.041	(0.303)	0.037	0.004
41	3.42	0.17	0.041	(0.302)	0.037	0.004
42	3.50	0.17	0.041	(0.301)	0.037	0.004
43	3.58	0.17	0.041	(0.299)	0.037	0.004
44	3.67	0.17	0.041	(0.298)	0.037	0.004
45	3.75	0.17	0.041	(0.297)	0.037	0.004
46	3.83	0.20	0.049	(0.296)	0.044	0.005
47	3.92	0.20	0.049	(0.294)	0.044	0.005
48	4.00	0.20	0.049	(0.293)	0.044	0.005
49	4.08	0.20	0.049	(0.292)	0.044	0.005
50	4.17	0.20	0.049	(0.291)	0.044	0.005
51	4.25	0.20	0.049	(0.289)	0.044	0.005
52	4.33	0.23	0.057	(0.288)	0.051	0.006
53	4.42	0.23	0.057	(0.287)	0.051	0.006
54	4.50	0.23	0.057	(0.286)	0.051	0.006

55	4.58	0.23	0.057	(0.284)	0.051	0.006
56	4.67	0.23	0.057	(0.283)	0.051	0.006
57	4.75	0.23	0.057	(0.282)	0.051	0.006
58	4.83	0.27	0.065	(0.281)	0.059	0.007
59	4.92	0.27	0.065	(0.280)	0.059	0.007
60	5.00	0.27	0.065	(0.278)	0.059	0.007
61	5.08	0.20	0.049	(0.277)	0.044	0.005
62	5.17	0.20	0.049	(0.276)	0.044	0.005
63	5.25	0.20	0.049	(0.275)	0.044	0.005
64	5.33	0.23	0.057	(0.273)	0.051	0.006
65	5.42	0.23	0.057	(0.272)	0.051	0.006
66	5.50	0.23	0.057	(0.271)	0.051	0.006
67	5.58	0.27	0.065	(0.270)	0.059	0.007
68	5.67	0.27	0.065	(0.269)	0.059	0.007
69	5.75	0.27	0.065	(0.268)	0.059	0.007
70	5.83	0.27	0.065	(0.266)	0.059	0.007
71	5.92	0.27	0.065	(0.265)	0.059	0.007
72	6.00	0.27	0.065	(0.264)	0.059	0.007
73	6.08	0.30	0.073	(0.263)	0.066	0.007
74	6.17	0.30	0.073	(0.262)	0.066	0.007
75	6.25	0.30	0.073	(0.260)	0.066	0.007
76	6.33	0.30	0.073	(0.259)	0.066	0.007
77	6.42	0.30	0.073	(0.258)	0.066	0.007
78	6.50	0.30	0.073	(0.257)	0.066	0.007
79	6.58	0.33	0.082	(0.256)	0.073	0.008
80	6.67	0.33	0.082	(0.255)	0.073	0.008
81	6.75	0.33	0.082	(0.254)	0.073	0.008
82	6.83	0.33	0.082	(0.252)	0.073	0.008
83	6.92	0.33	0.082	(0.251)	0.073	0.008
84	7.00	0.33	0.082	(0.250)	0.073	0.008
85	7.08	0.33	0.082	(0.249)	0.073	0.008
86	7.17	0.33	0.082	(0.248)	0.073	0.008
87	7.25	0.33	0.082	(0.247)	0.073	0.008
88	7.33	0.37	0.090	(0.246)	0.081	0.009
89	7.42	0.37	0.090	(0.244)	0.081	0.009
90	7.50	0.37	0.090	(0.243)	0.081	0.009
91	7.58	0.40	0.098	(0.242)	0.088	0.010
92	7.67	0.40	0.098	(0.241)	0.088	0.010
93	7.75	0.40	0.098	(0.240)	0.088	0.010
94	7.83	0.43	0.106	(0.239)	0.095	0.011
95	7.92	0.43	0.106	(0.238)	0.095	0.011
96	8.00	0.43	0.106	(0.237)	0.095	0.011
97	8.08	0.50	0.122	(0.236)	0.110	0.012
98	8.17	0.50	0.122	(0.234)	0.110	0.012
99	8.25	0.50	0.122	(0.233)	0.110	0.012
100	8.33	0.50	0.122	(0.232)	0.110	0.012
101	8.42	0.50	0.122	(0.231)	0.110	0.012
102	8.50	0.50	0.122	(0.230)	0.110	0.012
103	8.58	0.53	0.131	(0.229)	0.117	0.013
104	8.67	0.53	0.131	(0.228)	0.117	0.013
105	8.75	0.53	0.131	(0.227)	0.117	0.013
106	8.83	0.57	0.139	(0.226)	0.125	0.014
107	8.92	0.57	0.139	(0.225)	0.125	0.014
108	9.00	0.57	0.139	(0.224)	0.125	0.014
109	9.08	0.63	0.155	(0.223)	0.140	0.016
110	9.17	0.63	0.155	(0.222)	0.140	0.016

111	9.25	0.63	0.155	(0.221)	0.140	0.016
112	9.33	0.67	0.163	(0.219)	0.147	0.016
113	9.42	0.67	0.163	(0.218)	0.147	0.016
114	9.50	0.67	0.163	(0.217)	0.147	0.016
115	9.58	0.70	0.171	(0.216)	0.154	0.017
116	9.67	0.70	0.171	(0.215)	0.154	0.017
117	9.75	0.70	0.171	(0.214)	0.154	0.017
118	9.83	0.73	0.180	(0.213)	0.162	0.018
119	9.92	0.73	0.180	(0.212)	0.162	0.018
120	10.00	0.73	0.180	(0.211)	0.162	0.018
121	10.08	0.50	0.122	(0.210)	0.110	0.012
122	10.17	0.50	0.122	(0.209)	0.110	0.012
123	10.25	0.50	0.122	(0.208)	0.110	0.012
124	10.33	0.50	0.122	(0.207)	0.110	0.012
125	10.42	0.50	0.122	(0.206)	0.110	0.012
126	10.50	0.50	0.122	(0.205)	0.110	0.012
127	10.58	0.67	0.163	(0.204)	0.147	0.016
128	10.67	0.67	0.163	(0.203)	0.147	0.016
129	10.75	0.67	0.163	(0.202)	0.147	0.016
130	10.83	0.67	0.163	(0.201)	0.147	0.016
131	10.92	0.67	0.163	(0.200)	0.147	0.016
132	11.00	0.67	0.163	(0.199)	0.147	0.016
133	11.08	0.63	0.155	(0.198)	0.140	0.016
134	11.17	0.63	0.155	(0.197)	0.140	0.016
135	11.25	0.63	0.155	(0.196)	0.140	0.016
136	11.33	0.63	0.155	(0.195)	0.140	0.016
137	11.42	0.63	0.155	(0.194)	0.140	0.016
138	11.50	0.63	0.155	(0.193)	0.140	0.016
139	11.58	0.57	0.139	(0.192)	0.125	0.014
140	11.67	0.57	0.139	(0.191)	0.125	0.014
141	11.75	0.57	0.139	(0.190)	0.125	0.014
142	11.83	0.60	0.147	(0.190)	0.132	0.015
143	11.92	0.60	0.147	(0.189)	0.132	0.015
144	12.00	0.60	0.147	(0.188)	0.132	0.015
145	12.08	0.83	0.204	(0.187)	0.184	0.020
146	12.17	0.83	0.204	(0.186)	0.184	0.020
147	12.25	0.83	0.204	(0.185)	0.184	0.020
148	12.33	0.87	0.212	0.184	(0.191)	0.028
149	12.42	0.87	0.212	0.183	(0.191)	0.029
150	12.50	0.87	0.212	0.182	(0.191)	0.030
151	12.58	0.93	0.228	0.181	(0.206)	0.047
152	12.67	0.93	0.228	0.180	(0.206)	0.048
153	12.75	0.93	0.228	0.179	(0.206)	0.049
154	12.83	0.97	0.237	0.178	(0.213)	0.058
155	12.92	0.97	0.237	0.178	(0.213)	0.059
156	13.00	0.97	0.237	0.177	(0.213)	0.060
157	13.08	1.13	0.277	0.176	(0.250)	0.102
158	13.17	1.13	0.277	0.175	(0.250)	0.103
159	13.25	1.13	0.277	0.174	(0.250)	0.103
160	13.33	1.13	0.277	0.173	(0.250)	0.104
161	13.42	1.13	0.277	0.172	(0.250)	0.105
162	13.50	1.13	0.277	0.171	(0.250)	0.106
163	13.58	0.77	0.188	(0.170)	0.169	0.019
164	13.67	0.77	0.188	(0.170)	0.169	0.019
165	13.75	0.77	0.188	0.169	(0.169)	0.019
166	13.83	0.77	0.188	0.168	(0.169)	0.020

167	13.92	0.77	0.188	0.167	(0.169)	0.021
168	14.00	0.77	0.188	0.166	(0.169)	0.022
169	14.08	0.90	0.220	0.165	(0.198)	0.055
170	14.17	0.90	0.220	0.164	(0.198)	0.056
171	14.25	0.90	0.220	0.164	(0.198)	0.057
172	14.33	0.87	0.212	0.163	(0.191)	0.049
173	14.42	0.87	0.212	0.162	(0.191)	0.050
174	14.50	0.87	0.212	0.161	(0.191)	0.051
175	14.58	0.87	0.212	0.160	(0.191)	0.052
176	14.67	0.87	0.212	0.159	(0.191)	0.053
177	14.75	0.87	0.212	0.159	(0.191)	0.054
178	14.83	0.83	0.204	0.158	(0.184)	0.046
179	14.92	0.83	0.204	0.157	(0.184)	0.047
180	15.00	0.83	0.204	0.156	(0.184)	0.048
181	15.08	0.80	0.196	0.155	(0.176)	0.040
182	15.17	0.80	0.196	0.155	(0.176)	0.041
183	15.25	0.80	0.196	0.154	(0.176)	0.042
184	15.33	0.77	0.188	0.153	(0.169)	0.035
185	15.42	0.77	0.188	0.152	(0.169)	0.035
186	15.50	0.77	0.188	0.151	(0.169)	0.036
187	15.58	0.63	0.155	(0.151)	0.140	0.016
188	15.67	0.63	0.155	(0.150)	0.140	0.016
189	15.75	0.63	0.155	(0.149)	0.140	0.016
190	15.83	0.63	0.155	(0.148)	0.140	0.016
191	15.92	0.63	0.155	(0.148)	0.140	0.016
192	16.00	0.63	0.155	(0.147)	0.140	0.016
193	16.08	0.13	0.033	(0.146)	0.029	0.003
194	16.17	0.13	0.033	(0.145)	0.029	0.003
195	16.25	0.13	0.033	(0.145)	0.029	0.003
196	16.33	0.13	0.033	(0.144)	0.029	0.003
197	16.42	0.13	0.033	(0.143)	0.029	0.003
198	16.50	0.13	0.033	(0.142)	0.029	0.003
199	16.58	0.10	0.024	(0.142)	0.022	0.002
200	16.67	0.10	0.024	(0.141)	0.022	0.002
201	16.75	0.10	0.024	(0.140)	0.022	0.002
202	16.83	0.10	0.024	(0.140)	0.022	0.002
203	16.92	0.10	0.024	(0.139)	0.022	0.002
204	17.00	0.10	0.024	(0.138)	0.022	0.002
205	17.08	0.17	0.041	(0.137)	0.037	0.004
206	17.17	0.17	0.041	(0.137)	0.037	0.004
207	17.25	0.17	0.041	(0.136)	0.037	0.004
208	17.33	0.17	0.041	(0.135)	0.037	0.004
209	17.42	0.17	0.041	(0.135)	0.037	0.004
210	17.50	0.17	0.041	(0.134)	0.037	0.004
211	17.58	0.17	0.041	(0.133)	0.037	0.004
212	17.67	0.17	0.041	(0.133)	0.037	0.004
213	17.75	0.17	0.041	(0.132)	0.037	0.004
214	17.83	0.13	0.033	(0.131)	0.029	0.003
215	17.92	0.13	0.033	(0.131)	0.029	0.003
216	18.00	0.13	0.033	(0.130)	0.029	0.003
217	18.08	0.13	0.033	(0.129)	0.029	0.003
218	18.17	0.13	0.033	(0.129)	0.029	0.003
219	18.25	0.13	0.033	(0.128)	0.029	0.003
220	18.33	0.13	0.033	(0.128)	0.029	0.003
221	18.42	0.13	0.033	(0.127)	0.029	0.003
222	18.50	0.13	0.033	(0.126)	0.029	0.003

223	18.58	0.10	0.024	(0.126)	0.022	0.002
224	18.67	0.10	0.024	(0.125)	0.022	0.002
225	18.75	0.10	0.024	(0.125)	0.022	0.002
226	18.83	0.07	0.016	(0.124)	0.015	0.002
227	18.92	0.07	0.016	(0.123)	0.015	0.002
228	19.00	0.07	0.016	(0.123)	0.015	0.002
229	19.08	0.10	0.024	(0.122)	0.022	0.002
230	19.17	0.10	0.024	(0.122)	0.022	0.002
231	19.25	0.10	0.024	(0.121)	0.022	0.002
232	19.33	0.13	0.033	(0.120)	0.029	0.003
233	19.42	0.13	0.033	(0.120)	0.029	0.003
234	19.50	0.13	0.033	(0.119)	0.029	0.003
235	19.58	0.10	0.024	(0.119)	0.022	0.002
236	19.67	0.10	0.024	(0.118)	0.022	0.002
237	19.75	0.10	0.024	(0.118)	0.022	0.002
238	19.83	0.07	0.016	(0.117)	0.015	0.002
239	19.92	0.07	0.016	(0.117)	0.015	0.002
240	20.00	0.07	0.016	(0.116)	0.015	0.002
241	20.08	0.10	0.024	(0.116)	0.022	0.002
242	20.17	0.10	0.024	(0.115)	0.022	0.002
243	20.25	0.10	0.024	(0.115)	0.022	0.002
244	20.33	0.10	0.024	(0.114)	0.022	0.002
245	20.42	0.10	0.024	(0.114)	0.022	0.002
246	20.50	0.10	0.024	(0.113)	0.022	0.002
247	20.58	0.10	0.024	(0.113)	0.022	0.002
248	20.67	0.10	0.024	(0.112)	0.022	0.002
249	20.75	0.10	0.024	(0.112)	0.022	0.002
250	20.83	0.07	0.016	(0.111)	0.015	0.002
251	20.92	0.07	0.016	(0.111)	0.015	0.002
252	21.00	0.07	0.016	(0.110)	0.015	0.002
253	21.08	0.10	0.024	(0.110)	0.022	0.002
254	21.17	0.10	0.024	(0.110)	0.022	0.002
255	21.25	0.10	0.024	(0.109)	0.022	0.002
256	21.33	0.07	0.016	(0.109)	0.015	0.002
257	21.42	0.07	0.016	(0.108)	0.015	0.002
258	21.50	0.07	0.016	(0.108)	0.015	0.002
259	21.58	0.10	0.024	(0.107)	0.022	0.002
260	21.67	0.10	0.024	(0.107)	0.022	0.002
261	21.75	0.10	0.024	(0.107)	0.022	0.002
262	21.83	0.07	0.016	(0.106)	0.015	0.002
263	21.92	0.07	0.016	(0.106)	0.015	0.002
264	22.00	0.07	0.016	(0.106)	0.015	0.002
265	22.08	0.10	0.024	(0.105)	0.022	0.002
266	22.17	0.10	0.024	(0.105)	0.022	0.002
267	22.25	0.10	0.024	(0.105)	0.022	0.002
268	22.33	0.07	0.016	(0.104)	0.015	0.002
269	22.42	0.07	0.016	(0.104)	0.015	0.002
270	22.50	0.07	0.016	(0.104)	0.015	0.002
271	22.58	0.07	0.016	(0.103)	0.015	0.002
272	22.67	0.07	0.016	(0.103)	0.015	0.002
273	22.75	0.07	0.016	(0.103)	0.015	0.002
274	22.83	0.07	0.016	(0.102)	0.015	0.002
275	22.92	0.07	0.016	(0.102)	0.015	0.002
276	23.00	0.07	0.016	(0.102)	0.015	0.002
277	23.08	0.07	0.016	(0.102)	0.015	0.002
278	23.17	0.07	0.016	(0.102)	0.015	0.002

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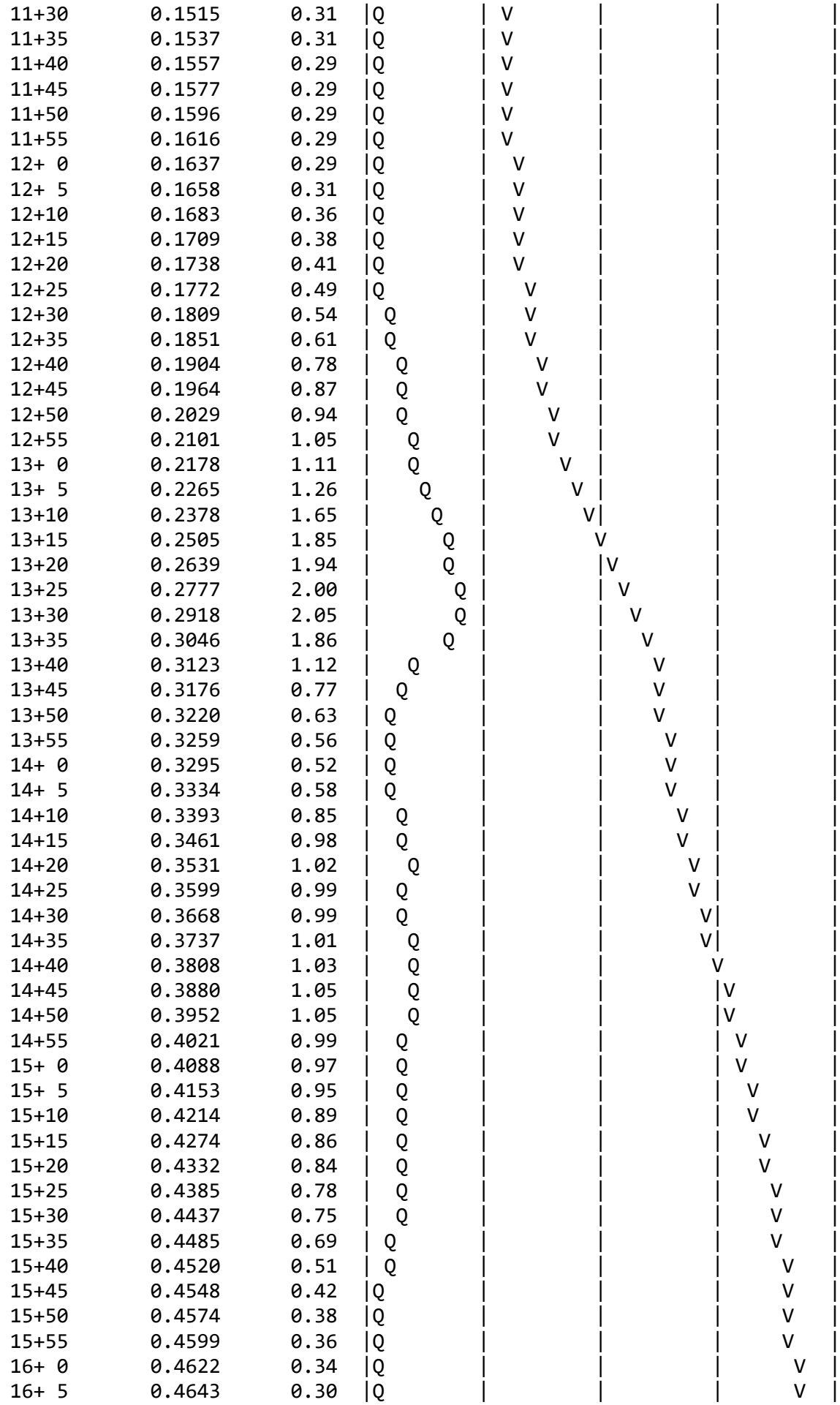
279  23.25     0.07      0.016       (  0.101)       0.015        0.002
280  23.33     0.07      0.016       (  0.101)       0.015        0.002
281  23.42     0.07      0.016       (  0.101)       0.015        0.002
282  23.50     0.07      0.016       (  0.101)       0.015        0.002
283  23.58     0.07      0.016       (  0.101)       0.015        0.002
284  23.67     0.07      0.016       (  0.100)       0.015        0.002
285  23.75     0.07      0.016       (  0.100)       0.015        0.002
286  23.83     0.07      0.016       (  0.100)       0.015        0.002
287  23.92     0.07      0.016       (  0.100)       0.015        0.002
288  24.00     0.07      0.016       (  0.100)       0.015        0.002
                (Loss Rate Not Used)
    Sum =     100.0                                    Sum =     3.6
       Flood volume = Effective rainfall      0.30(In)
        times area      20.0(Ac.)/[(In)/(Ft.)] =      0.5(Ac.Ft)
       Total soil loss =      1.74(In)
       Total soil loss =     2.901(Ac.Ft)
       Total rainfall =      2.04(In)
       Flood volume =       21749.8 Cubic Feet
       Total soil loss =      126348.4 Cubic Feet
       ---------------------------------------------------------------------
        Peak flow rate of this hydrograph =      2.050(CFS)
       ---------------------------------------------------------------------
       +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          24 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
       ---------------------------------------------------------------------
                   Hydrograph in   5   Minute intervals ((CFS))

       ---------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
 ----------------------------------------------------------------------------
   0+ 5       0.0000      0.00  Q         |         |         |         |
   0+10       0.0002      0.02  Q         |         |         |         |
   0+15       0.0003      0.03  Q         |         |         |         |
   0+20       0.0005      0.03  Q         |         |         |         |
   0+25       0.0008      0.04  Q         |         |         |         |
   0+30       0.0011      0.04  Q         |         |         |         |
   0+35       0.0014      0.05  Q         |         |         |         |
   0+40       0.0017      0.05  Q         |         |         |         |
   0+45       0.0021      0.05  Q         |         |         |         |
   0+50       0.0024      0.05  Q         |         |         |         |
   0+55       0.0028      0.06  Q         |         |         |         |
   1+ 0       0.0032      0.06  Q         |         |         |         |
   1+ 5       0.0037      0.06  Q         |         |         |         |
   1+10       0.0040      0.05  Q         |         |         |         |
   1+15       0.0044      0.05  Q         |         |         |         |
   1+20       0.0048      0.05  Q         |         |         |         |
   1+25       0.0051      0.05  Q         |         |         |         |
   1+30       0.0055      0.05  Q         |         |         |         |
   1+35       0.0058      0.05  Q         |         |         |         |
   1+40       0.0061      0.05  Q         |         |         |         |
   1+45       0.0065      0.05  Q         |         |         |         |
   1+50       0.0068      0.05  Q         |         |         |         |
   1+55       0.0072      0.06  Q         |         |         |         |
   2+ 0       0.0077      0.06  Q         |         |         |         |
   2+ 5       0.0081      0.06  Q         |         |         |         |
```

2+10	0.0085	0.06	Q	|	|	|	|
2+15	0.0090	0.06	Q	|	|	|	|
2+20	0.0094	0.07	Q	|	|	|	|
2+25	0.0099	0.07	Q	|	|	|	|
2+30	0.0103	0.07	Q	|	|	|	|
2+35	0.0108	0.07	Q	|	|	|	|
2+40	0.0113	0.08	Q	|	|	|	|
2+45	0.0119	0.08	Q	|	|	|	|
2+50	0.0124	0.08	Q	|	|	|	|
2+55	0.0130	0.08	QV	|	|	|	|
3+ 0	0.0135	0.08	QV	|	|	|	|
3+ 5	0.0141	0.08	QV	|	|	|	|
3+10	0.0147	0.08	QV	|	|	|	|
3+15	0.0152	0.08	QV	|	|	|	|
3+20	0.0158	0.08	QV	|	|	|	|
3+25	0.0164	0.08	QV	|	|	|	|
3+30	0.0169	0.08	QV	|	|	|	|
3+35	0.0175	0.08	QV	|	|	|	|
3+40	0.0181	0.08	QV	|	|	|	|
3+45	0.0186	0.08	QV	|	|	|	|
3+50	0.0192	0.08	QV	|	|	|	|
3+55	0.0198	0.09	QV	|	|	|	|
4+ 0	0.0205	0.09	QV	|	|	|	|
4+ 5	0.0211	0.10	QV	|	|	|	|
4+10	0.0218	0.10	QV	|	|	|	|
4+15	0.0225	0.10	QV	|	|	|	|
4+20	0.0232	0.10	QV	|	|	|	|
4+25	0.0239	0.11	QV	|	|	|	|
4+30	0.0247	0.11	QV	|	|	|	|
4+35	0.0255	0.11	Q V	|	|	|	|
4+40	0.0262	0.11	Q V	|	|	|	|
4+45	0.0270	0.11	Q V	|	|	|	|
4+50	0.0278	0.12	Q V	|	|	|	|
4+55	0.0287	0.12	Q V	|	|	|	|
5+ 0	0.0296	0.13	Q V	|	|	|	|
5+ 5	0.0304	0.12	Q V	|	|	|	|
5+10	0.0312	0.11	Q V	|	|	|	|
5+15	0.0319	0.11	Q V	|	|	|	|
5+20	0.0326	0.10	Q V	|	|	|	|
5+25	0.0334	0.11	Q V	|	|	|	|
5+30	0.0342	0.11	Q V	|	|	|	|
5+35	0.0350	0.12	Q V	|	|	|	|
5+40	0.0358	0.12	Q V	|	|	|	|
5+45	0.0367	0.13	Q V	|	|	|	|
5+50	0.0376	0.13	Q V	|	|	|	|
5+55	0.0385	0.13	Q V	|	|	|	|
6+ 0	0.0394	0.13	Q V	|	|	|	|
6+ 5	0.0403	0.13	Q V	|	|	|	|
6+10	0.0413	0.14	Q V	|	|	|	|
6+15	0.0423	0.14	Q V	|	|	|	|
6+20	0.0433	0.15	Q V	|	|	|	|
6+25	0.0443	0.15	Q V	|	|	|	|
6+30	0.0453	0.15	Q V	|	|	|	|
6+35	0.0463	0.15	Q V	|	|	|	|
6+40	0.0474	0.16	Q V	|	|	|	|
6+45	0.0485	0.16	Q V	|	|	|	|

```
 6+50       0.0496      0.16  Q  V      |          |          |          |
 6+55       0.0507      0.16  Q   V     |          |          |          |
 7+ 0       0.0519      0.16  Q   V     |          |          |          |
 7+ 5       0.0530      0.16  Q   V     |          |          |          |
 7+10       0.0541      0.16  Q   V     |          |          |          |
 7+15       0.0553      0.16  Q   V     |          |          |          |
 7+20       0.0564      0.17  Q   V     |          |          |          |
 7+25       0.0576      0.17  Q   V     |          |          |          |
 7+30       0.0588      0.18  Q   V     |          |          |          |
 7+35       0.0601      0.18  Q   V     |          |          |          |
 7+40       0.0614      0.19  Q   V     |          |          |          |
 7+45       0.0627      0.19  Q    V    |          |          |          |
 7+50       0.0640      0.20  Q    V    |          |          |          |
 7+55       0.0655      0.20  Q    V    |          |          |          |
 8+ 0       0.0669      0.21  Q    V    |          |          |          |
 8+ 5       0.0684      0.21  Q    V    |          |          |          |
 8+10       0.0700      0.23  Q    V    |          |          |          |
 8+15       0.0716      0.24  Q    V    |          |          |          |
 8+20       0.0733      0.24  Q    V    |          |          |          |
 8+25       0.0749      0.24  Q     V   |          |          |          |
 8+30       0.0766      0.24  Q     V   |          |          |          |
 8+35       0.0783      0.25  Q     V   |          |          |          |
 8+40       0.0801      0.26  |Q    V   |          |          |          |
 8+45       0.0819      0.26  |Q    V   |          |          |          |
 8+50       0.0837      0.26  |Q    V   |          |          |          |
 8+55       0.0855      0.27  |Q    V   |          |          |          |
 9+ 0       0.0874      0.27  |Q     V  |          |          |          |
 9+ 5       0.0894      0.28  |Q     V  |          |          |          |
 9+10       0.0914      0.30  |Q     V  |          |          |          |
 9+15       0.0935      0.30  |Q     V  |          |          |          |
 9+20       0.0956      0.31  |Q     V  |          |          |          |
 9+25       0.0978      0.32  |Q     V  |          |          |          |
 9+30       0.1000      0.32  |Q      V |          |          |          |
 9+35       0.1023      0.33  |Q      V |          |          |          |
 9+40       0.1046      0.34  |Q      V |          |          |          |
 9+45       0.1069      0.34  |Q      V |          |          |          |
 9+50       0.1093      0.34  |Q      V |          |          |          |
 9+55       0.1118      0.35  |Q      V |          |          |          |
10+ 0       0.1142      0.36  |Q       V|          |          |          |
10+ 5       0.1166      0.34  |Q       V|          |          |          |
10+10       0.1186      0.30  |Q       V|          |          |          |
10+15       0.1205      0.27  |Q       V|          |          |          |
10+20       0.1223      0.26  |Q       V|          |          |          |
10+25       0.1241      0.26  |Q       V|          |          |          |
10+30       0.1258      0.25  |Q        V          |          |          |
10+35       0.1276      0.26  |Q        V          |          |          |
10+40       0.1297      0.30  |Q        V          |          |          |
10+45       0.1318      0.31  |Q        V          |          |          |
10+50       0.1340      0.32  |Q        V          |          |          |
10+55       0.1362      0.32  |Q        V          |          |          |
11+ 0       0.1384      0.32  |Q        |V         |          |          |
11+ 5       0.1407      0.32  |Q        |V         |          |          |
11+10       0.1429      0.32  |Q        |V         |          |          |
11+15       0.1450      0.32  |Q        |V         |          |          |
11+20       0.1472      0.31  |Q        |V         |          |          |
11+25       0.1494      0.31  |Q        |V         |          |          |
```



16+10	0.4656	0.18	Q	|	|	|	V |
16+15	0.4665	0.13	Q	|	|	|	V |
16+20	0.4672	0.10	Q	|	|	|	V |
16+25	0.4678	0.09	Q	|	|	|	V |
16+30	0.4684	0.08	Q	|	|	|	V |
16+35	0.4689	0.07	Q	|	|	|	V |
16+40	0.4693	0.06	Q	|	|	|	V |
16+45	0.4697	0.06	Q	|	|	|	V |
16+50	0.4701	0.05	Q	|	|	|	V |
16+55	0.4704	0.05	Q	|	|	|	V |
17+ 0	0.4708	0.05	Q	|	|	|	V |
17+ 5	0.4711	0.05	Q	|	|	|	V |
17+10	0.4716	0.07	Q	|	|	|	V |
17+15	0.4721	0.07	Q	|	|	|	V |
17+20	0.4726	0.08	Q	|	|	|	V |
17+25	0.4732	0.08	Q	|	|	|	V |
17+30	0.4737	0.08	Q	|	|	|	V |
17+35	0.4743	0.08	Q	|	|	|	V |
17+40	0.4749	0.08	Q	|	|	|	V |
17+45	0.4754	0.08	Q	|	|	|	V |
17+50	0.4760	0.08	Q	|	|	|	V |
17+55	0.4765	0.07	Q	|	|	|	V |
18+ 0	0.4770	0.07	Q	|	|	|	V |
18+ 5	0.4774	0.07	Q	|	|	|	V |
18+10	0.4779	0.07	Q	|	|	|	V |
18+15	0.4784	0.07	Q	|	|	|	V |
18+20	0.4788	0.07	Q	|	|	|	V |
18+25	0.4793	0.07	Q	|	|	|	V |
18+30	0.4797	0.07	Q	|	|	|	V |
18+35	0.4802	0.06	Q	|	|	|	V |
18+40	0.4806	0.06	Q	|	|	|	V |
18+45	0.4809	0.05	Q	|	|	|	V |
18+50	0.4813	0.05	Q	|	|	|	V |
18+55	0.4816	0.04	Q	|	|	|	V |
19+ 0	0.4818	0.04	Q	|	|	|	V |
19+ 5	0.4821	0.04	Q	|	|	|	V |
19+10	0.4824	0.04	Q	|	|	|	V |
19+15	0.4827	0.05	Q	|	|	|	V |
19+20	0.4830	0.05	Q	|	|	|	V |
19+25	0.4834	0.06	Q	|	|	|	V |
19+30	0.4839	0.06	Q	|	|	|	V |
19+35	0.4843	0.06	Q	|	|	|	V |
19+40	0.4847	0.05	Q	|	|	|	V |
19+45	0.4850	0.05	Q	|	|	|	V |
19+50	0.4853	0.05	Q	|	|	|	V |
19+55	0.4856	0.04	Q	|	|	|	V |
20+ 0	0.4859	0.04	Q	|	|	|	V |
20+ 5	0.4862	0.04	Q	|	|	|	V |
20+10	0.4865	0.04	Q	|	|	|	V |
20+15	0.4868	0.05	Q	|	|	|	V |
20+20	0.4871	0.05	Q	|	|	|	V|
20+25	0.4874	0.05	Q	|	|	|	V|
20+30	0.4878	0.05	Q	|	|	|	V|
20+35	0.4881	0.05	Q	|	|	|	V|
20+40	0.4884	0.05	Q	|	|	|	V|
20+45	0.4888	0.05	Q	|	|	|	V|

20+50	0.4891	0.05	Q	|	|	|	V|
20+55	0.4894	0.04	Q	|	|	|	V|
21+ 0	0.4896	0.04	Q	|	|	|	V|
21+ 5	0.4899	0.04	Q	|	|	|	V|
21+10	0.4902	0.04	Q	|	|	|	V|
21+15	0.4905	0.05	Q	|	|	|	V|
21+20	0.4908	0.05	Q	|	|	|	V|
21+25	0.4911	0.04	Q	|	|	|	V|
21+30	0.4914	0.04	Q	|	|	|	V|
21+35	0.4916	0.04	Q	|	|	|	V|
21+40	0.4919	0.04	Q	|	|	|	V|
21+45	0.4922	0.05	Q	|	|	|	V|
21+50	0.4925	0.05	Q	|	|	|	V|
21+55	0.4928	0.04	Q	|	|	|	V|
22+ 0	0.4931	0.04	Q	|	|	|	V|
22+ 5	0.4933	0.04	Q	|	|	|	V|
22+10	0.4936	0.04	Q	|	|	|	V|
22+15	0.4939	0.05	Q	|	|	|	V|
22+20	0.4942	0.05	Q	|	|	|	V|
22+25	0.4945	0.04	Q	|	|	|	V|
22+30	0.4948	0.04	Q	|	|	|	V|
22+35	0.4950	0.03	Q	|	|	|	V|
22+40	0.4952	0.03	Q	|	|	|	V|
22+45	0.4955	0.03	Q	|	|	|	V|
22+50	0.4957	0.03	Q	|	|	|	V|
22+55	0.4959	0.03	Q	|	|	|	V|
23+ 0	0.4961	0.03	Q	|	|	|	V|
23+ 5	0.4964	0.03	Q	|	|	|	V|
23+10	0.4966	0.03	Q	|	|	|	V|
23+15	0.4968	0.03	Q	|	|	|	V|
23+20	0.4971	0.03	Q	|	|	|	V|
23+25	0.4973	0.03	Q	|	|	|	V|
23+30	0.4975	0.03	Q	|	|	|	V|
23+35	0.4977	0.03	Q	|	|	|	V|
23+40	0.4980	0.03	Q	|	|	|	V|
23+45	0.4982	0.03	Q	|	|	|	V|
23+50	0.4984	0.03	Q	|	|	|	V|
23+55	0.4986	0.03	Q	|	|	|	V|
24+ 0	0.4989	0.03	Q	|	|	|	V|
24+ 5	0.4991	0.03	Q	|	|	|	V|
24+10	0.4992	0.01	Q	|	|	|	V|
24+15	0.4992	0.01	Q	|	|	|	V|
24+20	0.4992	0.00	Q	|	|	|	V|
24+25	0.4993	0.00	Q	|	|	|	V|
24+30	0.4993	0.00	Q	|	|	|	V|
24+35	0.4993	0.00	Q	|	|	|	V|
24+40	0.4993	0.00	Q	|	|	|	V|
24+45	0.4993	0.00	Q	|	|	|	V|
24+50	0.4993	0.00	Q	|	|	|	V|

U n i t H y d r o g r a p h A n a l y s i s

Study date 05/03/21 File: ONSITEPROP242.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 4010

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

20-0026 - MENIFEE COMMERCE CENTER
ONSITE UNIT HYDROGRAPH ANALYSIS
PROPOSED CONDITION, 2-YEAR 24-HOUR: BUILDING 2
FN: ONSITEPROP242.OUT- TSW

Drainage Area = 20.00(Ac.) = 0.031 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 20.00(Ac.) = 0.031 Sq. Mi.
Length along longest watercourse = 1842.00(Ft.)
Length along longest watercourse measured to centroid = 967.00(Ft.)
Length along longest watercourse = 0.349 Mi.
Length along longest watercourse measured to centroid = 0.183 Mi.
Difference in elevation = 12.70(Ft.)
Slope along watercourse = 36.4039 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.064 Hr.
Lag time = 3.84 Min.
25% of lag time = 0.96 Min.
40% of lag time = 1.53 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
20.00	2.04	40.80

100 YEAR Area rainfall data:

```
Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       20.00            5.33                 106.60

STORM EVENT (YEAR) =    2.00
Area Averaged 2-Year Rainfall =    2.040(In)
Area Averaged 100-Year Rainfall =    5.330(In)

Point rain (area averaged) =    2.040(In)
Areal adjustment factor =  100.00 %
Adjusted average point rain =    2.040(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
    20.000           69.00         0.900
 Total Area Entered =     20.00(Ac.)


RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
AMC2 AMC-1     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
69.0  49.8      0.574     0.900        0.109       1.000      0.109
                                                 Sum (F) =   0.109
Area averaged mean soil loss (F) (In/Hr) =  0.109
Minimum soil loss rate ((In/Hr)) =  0.055
(for 24 hour storm duration)
Soil low loss rate (decimal) =   0.900
------------------------------------------------------------------------

               U n i t  H y d r o g r a p h
                       VALLEY S-Curve
------------------------------------------------------------------------
               Unit Hydrograph Data
------------------------------------------------------------------------
Unit time period   Time % of lag   Distribution   Unit Hydrograph
    (hrs)                          Graph %            (CFS)
------------------------------------------------------------------------
    1   0.083        130.336         28.113              5.667
    2   0.167        260.672         48.274              9.730
    3   0.250        391.008         12.476              2.515
    4   0.333        521.344          5.578              1.124
    5   0.417        651.679          3.063              0.617
    6   0.500        782.015          1.665              0.336
    7   0.583        912.351          0.832              0.168
                                Sum = 100.000   Sum=      20.156
------------------------------------------------------------------------

 The following loss rate calculations reflect use of the minimum calculated loss
 rate subtracted from the Storm Rain to produce the maximum Effective Rain value

  Unit Time   Pattern   Storm Rain     Loss rate(In./Hr)     Effective
       (Hr.)  Percent   (In/Hr)         Max   |   Low        (In/Hr)
   1   0.08     0.07      0.016       (  0.193)       0.015        0.002
   2   0.17     0.07      0.016       (  0.193)       0.015        0.002
   3   0.25     0.07      0.016       (  0.192)       0.015        0.002
   4   0.33     0.10      0.024       (  0.191)       0.022        0.002
```

5	0.42	0.10	0.024	(0.190)	0.022	0.002
6	0.50	0.10	0.024	(0.190)	0.022	0.002
7	0.58	0.10	0.024	(0.189)	0.022	0.002
8	0.67	0.10	0.024	(0.188)	0.022	0.002
9	0.75	0.10	0.024	(0.187)	0.022	0.002
10	0.83	0.13	0.033	(0.187)	0.029	0.003
11	0.92	0.13	0.033	(0.186)	0.029	0.003
12	1.00	0.13	0.033	(0.185)	0.029	0.003
13	1.08	0.10	0.024	(0.184)	0.022	0.002
14	1.17	0.10	0.024	(0.184)	0.022	0.002
15	1.25	0.10	0.024	(0.183)	0.022	0.002
16	1.33	0.10	0.024	(0.182)	0.022	0.002
17	1.42	0.10	0.024	(0.182)	0.022	0.002
18	1.50	0.10	0.024	(0.181)	0.022	0.002
19	1.58	0.10	0.024	(0.180)	0.022	0.002
20	1.67	0.10	0.024	(0.179)	0.022	0.002
21	1.75	0.10	0.024	(0.179)	0.022	0.002
22	1.83	0.13	0.033	(0.178)	0.029	0.003
23	1.92	0.13	0.033	(0.177)	0.029	0.003
24	2.00	0.13	0.033	(0.176)	0.029	0.003
25	2.08	0.13	0.033	(0.176)	0.029	0.003
26	2.17	0.13	0.033	(0.175)	0.029	0.003
27	2.25	0.13	0.033	(0.174)	0.029	0.003
28	2.33	0.13	0.033	(0.174)	0.029	0.003
29	2.42	0.13	0.033	(0.173)	0.029	0.003
30	2.50	0.13	0.033	(0.172)	0.029	0.003
31	2.58	0.17	0.041	(0.172)	0.037	0.004
32	2.67	0.17	0.041	(0.171)	0.037	0.004
33	2.75	0.17	0.041	(0.170)	0.037	0.004
34	2.83	0.17	0.041	(0.169)	0.037	0.004
35	2.92	0.17	0.041	(0.169)	0.037	0.004
36	3.00	0.17	0.041	(0.168)	0.037	0.004
37	3.08	0.17	0.041	(0.167)	0.037	0.004
38	3.17	0.17	0.041	(0.167)	0.037	0.004
39	3.25	0.17	0.041	(0.166)	0.037	0.004
40	3.33	0.17	0.041	(0.165)	0.037	0.004
41	3.42	0.17	0.041	(0.165)	0.037	0.004
42	3.50	0.17	0.041	(0.164)	0.037	0.004
43	3.58	0.17	0.041	(0.163)	0.037	0.004
44	3.67	0.17	0.041	(0.162)	0.037	0.004
45	3.75	0.17	0.041	(0.162)	0.037	0.004
46	3.83	0.20	0.049	(0.161)	0.044	0.005
47	3.92	0.20	0.049	(0.160)	0.044	0.005
48	4.00	0.20	0.049	(0.160)	0.044	0.005
49	4.08	0.20	0.049	(0.159)	0.044	0.005
50	4.17	0.20	0.049	(0.158)	0.044	0.005
51	4.25	0.20	0.049	(0.158)	0.044	0.005
52	4.33	0.23	0.057	(0.157)	0.051	0.006
53	4.42	0.23	0.057	(0.156)	0.051	0.006
54	4.50	0.23	0.057	(0.156)	0.051	0.006
55	4.58	0.23	0.057	(0.155)	0.051	0.006
56	4.67	0.23	0.057	(0.154)	0.051	0.006
57	4.75	0.23	0.057	(0.154)	0.051	0.006
58	4.83	0.27	0.065	(0.153)	0.059	0.007
59	4.92	0.27	0.065	(0.152)	0.059	0.007
60	5.00	0.27	0.065	(0.152)	0.059	0.007

61	5.08	0.20	0.049	(0.151)	0.044	0.005
62	5.17	0.20	0.049	(0.150)	0.044	0.005
63	5.25	0.20	0.049	(0.150)	0.044	0.005
64	5.33	0.23	0.057	(0.149)	0.051	0.006
65	5.42	0.23	0.057	(0.148)	0.051	0.006
66	5.50	0.23	0.057	(0.148)	0.051	0.006
67	5.58	0.27	0.065	(0.147)	0.059	0.007
68	5.67	0.27	0.065	(0.147)	0.059	0.007
69	5.75	0.27	0.065	(0.146)	0.059	0.007
70	5.83	0.27	0.065	(0.145)	0.059	0.007
71	5.92	0.27	0.065	(0.145)	0.059	0.007
72	6.00	0.27	0.065	(0.144)	0.059	0.007
73	6.08	0.30	0.073	(0.143)	0.066	0.007
74	6.17	0.30	0.073	(0.143)	0.066	0.007
75	6.25	0.30	0.073	(0.142)	0.066	0.007
76	6.33	0.30	0.073	(0.141)	0.066	0.007
77	6.42	0.30	0.073	(0.141)	0.066	0.007
78	6.50	0.30	0.073	(0.140)	0.066	0.007
79	6.58	0.33	0.082	(0.140)	0.073	0.008
80	6.67	0.33	0.082	(0.139)	0.073	0.008
81	6.75	0.33	0.082	(0.138)	0.073	0.008
82	6.83	0.33	0.082	(0.138)	0.073	0.008
83	6.92	0.33	0.082	(0.137)	0.073	0.008
84	7.00	0.33	0.082	(0.136)	0.073	0.008
85	7.08	0.33	0.082	(0.136)	0.073	0.008
86	7.17	0.33	0.082	(0.135)	0.073	0.008
87	7.25	0.33	0.082	(0.135)	0.073	0.008
88	7.33	0.37	0.090	(0.134)	0.081	0.009
89	7.42	0.37	0.090	(0.133)	0.081	0.009
90	7.50	0.37	0.090	(0.133)	0.081	0.009
91	7.58	0.40	0.098	(0.132)	0.088	0.010
92	7.67	0.40	0.098	(0.131)	0.088	0.010
93	7.75	0.40	0.098	(0.131)	0.088	0.010
94	7.83	0.43	0.106	(0.130)	0.095	0.011
95	7.92	0.43	0.106	(0.130)	0.095	0.011
96	8.00	0.43	0.106	(0.129)	0.095	0.011
97	8.08	0.50	0.122	(0.128)	0.110	0.012
98	8.17	0.50	0.122	(0.128)	0.110	0.012
99	8.25	0.50	0.122	(0.127)	0.110	0.012
100	8.33	0.50	0.122	(0.127)	0.110	0.012
101	8.42	0.50	0.122	(0.126)	0.110	0.012
102	8.50	0.50	0.122	(0.125)	0.110	0.012
103	8.58	0.53	0.131	(0.125)	0.117	0.013
104	8.67	0.53	0.131	(0.124)	0.117	0.013
105	8.75	0.53	0.131	(0.124)	0.117	0.013
106	8.83	0.57	0.139	0.123	(0.125)	0.016
107	8.92	0.57	0.139	0.123	(0.125)	0.016
108	9.00	0.57	0.139	0.122	(0.125)	0.017
109	9.08	0.63	0.155	0.121	(0.140)	0.034
110	9.17	0.63	0.155	0.121	(0.140)	0.034
111	9.25	0.63	0.155	0.120	(0.140)	0.035
112	9.33	0.67	0.163	0.120	(0.147)	0.044
113	9.42	0.67	0.163	0.119	(0.147)	0.044
114	9.50	0.67	0.163	0.119	(0.147)	0.045
115	9.58	0.70	0.171	0.118	(0.154)	0.053
116	9.67	0.70	0.171	0.117	(0.154)	0.054

117	9.75	0.70	0.171		0.117	(0.154)	0.055
118	9.83	0.73	0.180		0.116	(0.162)	0.063
119	9.92	0.73	0.180		0.116	(0.162)	0.064
120	10.00	0.73	0.180		0.115	(0.162)	0.064
121	10.08	0.50	0.122	(0.115)		0.110	0.012
122	10.17	0.50	0.122	(0.114)		0.110	0.012
123	10.25	0.50	0.122	(0.113)		0.110	0.012
124	10.33	0.50	0.122	(0.113)		0.110	0.012
125	10.42	0.50	0.122	(0.112)		0.110	0.012
126	10.50	0.50	0.122	(0.112)		0.110	0.012
127	10.58	0.67	0.163		0.111	(0.147)	0.052
128	10.67	0.67	0.163		0.111	(0.147)	0.052
129	10.75	0.67	0.163		0.110	(0.147)	0.053
130	10.83	0.67	0.163		0.110	(0.147)	0.054
131	10.92	0.67	0.163		0.109	(0.147)	0.054
132	11.00	0.67	0.163		0.109	(0.147)	0.055
133	11.08	0.63	0.155		0.108	(0.140)	0.047
134	11.17	0.63	0.155		0.108	(0.140)	0.048
135	11.25	0.63	0.155		0.107	(0.140)	0.048
136	11.33	0.63	0.155		0.106	(0.140)	0.049
137	11.42	0.63	0.155		0.106	(0.140)	0.049
138	11.50	0.63	0.155		0.105	(0.140)	0.050
139	11.58	0.57	0.139		0.105	(0.125)	0.034
140	11.67	0.57	0.139		0.104	(0.125)	0.034
141	11.75	0.57	0.139		0.104	(0.125)	0.035
142	11.83	0.60	0.147		0.103	(0.132)	0.044
143	11.92	0.60	0.147		0.103	(0.132)	0.044
144	12.00	0.60	0.147		0.102	(0.132)	0.045
145	12.08	0.83	0.204		0.102	(0.184)	0.102
146	12.17	0.83	0.204		0.101	(0.184)	0.103
147	12.25	0.83	0.204		0.101	(0.184)	0.103
148	12.33	0.87	0.212		0.100	(0.191)	0.112
149	12.42	0.87	0.212		0.100	(0.191)	0.112
150	12.50	0.87	0.212		0.099	(0.191)	0.113
151	12.58	0.93	0.228		0.099	(0.206)	0.130
152	12.67	0.93	0.228		0.098	(0.206)	0.130
153	12.75	0.93	0.228		0.098	(0.206)	0.131
154	12.83	0.97	0.237		0.097	(0.213)	0.139
155	12.92	0.97	0.237		0.097	(0.213)	0.140
156	13.00	0.97	0.237		0.096	(0.213)	0.140
157	13.08	1.13	0.277		0.096	(0.250)	0.182
158	13.17	1.13	0.277		0.095	(0.250)	0.182
159	13.25	1.13	0.277		0.095	(0.250)	0.183
160	13.33	1.13	0.277		0.094	(0.250)	0.183
161	13.42	1.13	0.277		0.094	(0.250)	0.184
162	13.50	1.13	0.277		0.093	(0.250)	0.184
163	13.58	0.77	0.188		0.093	(0.169)	0.095
164	13.67	0.77	0.188		0.092	(0.169)	0.095
165	13.75	0.77	0.188		0.092	(0.169)	0.096
166	13.83	0.77	0.188		0.092	(0.169)	0.096
167	13.92	0.77	0.188		0.091	(0.169)	0.097
168	14.00	0.77	0.188		0.091	(0.169)	0.097
169	14.08	0.90	0.220		0.090	(0.198)	0.130
170	14.17	0.90	0.220		0.090	(0.198)	0.131
171	14.25	0.90	0.220		0.089	(0.198)	0.131
172	14.33	0.87	0.212		0.089	(0.191)	0.123

173	14.42	0.87	0.212		0.088	(0.191)	0.124
174	14.50	0.87	0.212		0.088	(0.191)	0.124
175	14.58	0.87	0.212		0.087	(0.191)	0.125
176	14.67	0.87	0.212		0.087	(0.191)	0.125
177	14.75	0.87	0.212		0.086	(0.191)	0.126
178	14.83	0.83	0.204		0.086	(0.184)	0.118
179	14.92	0.83	0.204		0.086	(0.184)	0.118
180	15.00	0.83	0.204		0.085	(0.184)	0.119
181	15.08	0.80	0.196		0.085	(0.176)	0.111
182	15.17	0.80	0.196		0.084	(0.176)	0.112
183	15.25	0.80	0.196		0.084	(0.176)	0.112
184	15.33	0.77	0.188		0.083	(0.169)	0.104
185	15.42	0.77	0.188		0.083	(0.169)	0.105
186	15.50	0.77	0.188		0.083	(0.169)	0.105
187	15.58	0.63	0.155		0.082	(0.140)	0.073
188	15.67	0.63	0.155		0.082	(0.140)	0.073
189	15.75	0.63	0.155		0.081	(0.140)	0.074
190	15.83	0.63	0.155		0.081	(0.140)	0.074
191	15.92	0.63	0.155		0.080	(0.140)	0.075
192	16.00	0.63	0.155		0.080	(0.140)	0.075
193	16.08	0.13	0.033	(0.080)		0.029	0.003
194	16.17	0.13	0.033	(0.079)		0.029	0.003
195	16.25	0.13	0.033	(0.079)		0.029	0.003
196	16.33	0.13	0.033	(0.078)		0.029	0.003
197	16.42	0.13	0.033	(0.078)		0.029	0.003
198	16.50	0.13	0.033	(0.078)		0.029	0.003
199	16.58	0.10	0.024	(0.077)		0.022	0.002
200	16.67	0.10	0.024	(0.077)		0.022	0.002
201	16.75	0.10	0.024	(0.076)		0.022	0.002
202	16.83	0.10	0.024	(0.076)		0.022	0.002
203	16.92	0.10	0.024	(0.076)		0.022	0.002
204	17.00	0.10	0.024	(0.075)		0.022	0.002
205	17.08	0.17	0.041	(0.075)		0.037	0.004
206	17.17	0.17	0.041	(0.075)		0.037	0.004
207	17.25	0.17	0.041	(0.074)		0.037	0.004
208	17.33	0.17	0.041	(0.074)		0.037	0.004
209	17.42	0.17	0.041	(0.073)		0.037	0.004
210	17.50	0.17	0.041	(0.073)		0.037	0.004
211	17.58	0.17	0.041	(0.073)		0.037	0.004
212	17.67	0.17	0.041	(0.072)		0.037	0.004
213	17.75	0.17	0.041	(0.072)		0.037	0.004
214	17.83	0.13	0.033	(0.072)		0.029	0.003
215	17.92	0.13	0.033	(0.071)		0.029	0.003
216	18.00	0.13	0.033	(0.071)		0.029	0.003
217	18.08	0.13	0.033	(0.071)		0.029	0.003
218	18.17	0.13	0.033	(0.070)		0.029	0.003
219	18.25	0.13	0.033	(0.070)		0.029	0.003
220	18.33	0.13	0.033	(0.070)		0.029	0.003
221	18.42	0.13	0.033	(0.069)		0.029	0.003
222	18.50	0.13	0.033	(0.069)		0.029	0.003
223	18.58	0.10	0.024	(0.069)		0.022	0.002
224	18.67	0.10	0.024	(0.068)		0.022	0.002
225	18.75	0.10	0.024	(0.068)		0.022	0.002
226	18.83	0.07	0.016	(0.068)		0.015	0.002
227	18.92	0.07	0.016	(0.067)		0.015	0.002
228	19.00	0.07	0.016	(0.067)		0.015	0.002

229	19.08	0.10	0.024	(0.067)	0.022	0.002
230	19.17	0.10	0.024	(0.066)	0.022	0.002
231	19.25	0.10	0.024	(0.066)	0.022	0.002
232	19.33	0.13	0.033	(0.066)	0.029	0.003
233	19.42	0.13	0.033	(0.065)	0.029	0.003
234	19.50	0.13	0.033	(0.065)	0.029	0.003
235	19.58	0.10	0.024	(0.065)	0.022	0.002
236	19.67	0.10	0.024	(0.064)	0.022	0.002
237	19.75	0.10	0.024	(0.064)	0.022	0.002
238	19.83	0.07	0.016	(0.064)	0.015	0.002
239	19.92	0.07	0.016	(0.064)	0.015	0.002
240	20.00	0.07	0.016	(0.063)	0.015	0.002
241	20.08	0.10	0.024	(0.063)	0.022	0.002
242	20.17	0.10	0.024	(0.063)	0.022	0.002
243	20.25	0.10	0.024	(0.062)	0.022	0.002
244	20.33	0.10	0.024	(0.062)	0.022	0.002
245	20.42	0.10	0.024	(0.062)	0.022	0.002
246	20.50	0.10	0.024	(0.062)	0.022	0.002
247	20.58	0.10	0.024	(0.061)	0.022	0.002
248	20.67	0.10	0.024	(0.061)	0.022	0.002
249	20.75	0.10	0.024	(0.061)	0.022	0.002
250	20.83	0.07	0.016	(0.061)	0.015	0.002
251	20.92	0.07	0.016	(0.060)	0.015	0.002
252	21.00	0.07	0.016	(0.060)	0.015	0.002
253	21.08	0.10	0.024	(0.060)	0.022	0.002
254	21.17	0.10	0.024	(0.060)	0.022	0.002
255	21.25	0.10	0.024	(0.059)	0.022	0.002
256	21.33	0.07	0.016	(0.059)	0.015	0.002
257	21.42	0.07	0.016	(0.059)	0.015	0.002
258	21.50	0.07	0.016	(0.059)	0.015	0.002
259	21.58	0.10	0.024	(0.059)	0.022	0.002
260	21.67	0.10	0.024	(0.058)	0.022	0.002
261	21.75	0.10	0.024	(0.058)	0.022	0.002
262	21.83	0.07	0.016	(0.058)	0.015	0.002
263	21.92	0.07	0.016	(0.058)	0.015	0.002
264	22.00	0.07	0.016	(0.058)	0.015	0.002
265	22.08	0.10	0.024	(0.057)	0.022	0.002
266	22.17	0.10	0.024	(0.057)	0.022	0.002
267	22.25	0.10	0.024	(0.057)	0.022	0.002
268	22.33	0.07	0.016	(0.057)	0.015	0.002
269	22.42	0.07	0.016	(0.057)	0.015	0.002
270	22.50	0.07	0.016	(0.057)	0.015	0.002
271	22.58	0.07	0.016	(0.056)	0.015	0.002
272	22.67	0.07	0.016	(0.056)	0.015	0.002
273	22.75	0.07	0.016	(0.056)	0.015	0.002
274	22.83	0.07	0.016	(0.056)	0.015	0.002
275	22.92	0.07	0.016	(0.056)	0.015	0.002
276	23.00	0.07	0.016	(0.056)	0.015	0.002
277	23.08	0.07	0.016	(0.055)	0.015	0.002
278	23.17	0.07	0.016	(0.055)	0.015	0.002
279	23.25	0.07	0.016	(0.055)	0.015	0.002
280	23.33	0.07	0.016	(0.055)	0.015	0.002
281	23.42	0.07	0.016	(0.055)	0.015	0.002
282	23.50	0.07	0.016	(0.055)	0.015	0.002
283	23.58	0.07	0.016	(0.055)	0.015	0.002
284	23.67	0.07	0.016	(0.055)	0.015	0.002

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285  23.75     0.07      0.016       (  0.055)       0.015        0.002
286  23.83     0.07      0.016       (  0.055)       0.015        0.002
287  23.92     0.07      0.016       (  0.055)       0.015        0.002
288  24.00     0.07      0.016       (  0.055)       0.015        0.002
               (Loss Rate Not Used)
    Sum =     100.0                                    Sum =     8.1
       Flood volume = Effective rainfall      0.68(In)
        times area      20.0(Ac.)/[(In)/(Ft.)] =       1.1(Ac.Ft)
       Total soil loss =      1.36(In)
       Total soil loss =     2.272(Ac.Ft)
       Total rainfall =      2.04(In)
       Flood volume =       49113.8 Cubic Feet
       Total soil loss =       98984.4 Cubic Feet
       ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =      3.693(CFS)
       ---------------------------------------------------------------------
       +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                           24 - H O U R    S T O R M
                      R u n o f f      H y d r o g r a p h
       ---------------------------------------------------------------------
                   Hydrograph in   5   Minute intervals ((CFS))

       ---------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
 ---------------------------------------------------------------------------
   0+ 5       0.0001      0.01  Q         |         |         |         |
   0+10       0.0002      0.03  Q         |         |         |         |
   0+15       0.0004      0.03  Q         |         |         |         |
   0+20       0.0007      0.04  Q         |         |         |         |
   0+25       0.0010      0.04  Q         |         |         |         |
   0+30       0.0013      0.05  Q         |         |         |         |
   0+35       0.0017      0.05  Q         |         |         |         |
   0+40       0.0020      0.05  Q         |         |         |         |
   0+45       0.0023      0.05  Q         |         |         |         |
   0+50       0.0027      0.05  Q         |         |         |         |
   0+55       0.0031      0.06  Q         |         |         |         |
   1+ 0       0.0036      0.06  Q         |         |         |         |
   1+ 5       0.0040      0.06  Q         |         |         |         |
   1+10       0.0043      0.05  Q         |         |         |         |
   1+15       0.0047      0.05  Q         |         |         |         |
   1+20       0.0050      0.05  Q         |         |         |         |
   1+25       0.0054      0.05  Q         |         |         |         |
   1+30       0.0057      0.05  Q         |         |         |         |
   1+35       0.0061      0.05  Q         |         |         |         |
   1+40       0.0064      0.05  Q         |         |         |         |
   1+45       0.0067      0.05  Q         |         |         |         |
   1+50       0.0071      0.05  Q         |         |         |         |
   1+55       0.0075      0.06  Q         |         |         |         |
   2+ 0       0.0080      0.06  Q         |         |         |         |
   2+ 5       0.0084      0.06  Q         |         |         |         |
   2+10       0.0089      0.07  Q         |         |         |         |
   2+15       0.0093      0.07  Q         |         |         |         |
   2+20       0.0098      0.07  Q         |         |         |         |
   2+25       0.0102      0.07  Q         |         |         |         |
   2+30       0.0107      0.07  Q         |         |         |         |
   2+35       0.0112      0.07  Q         |         |         |         |
```
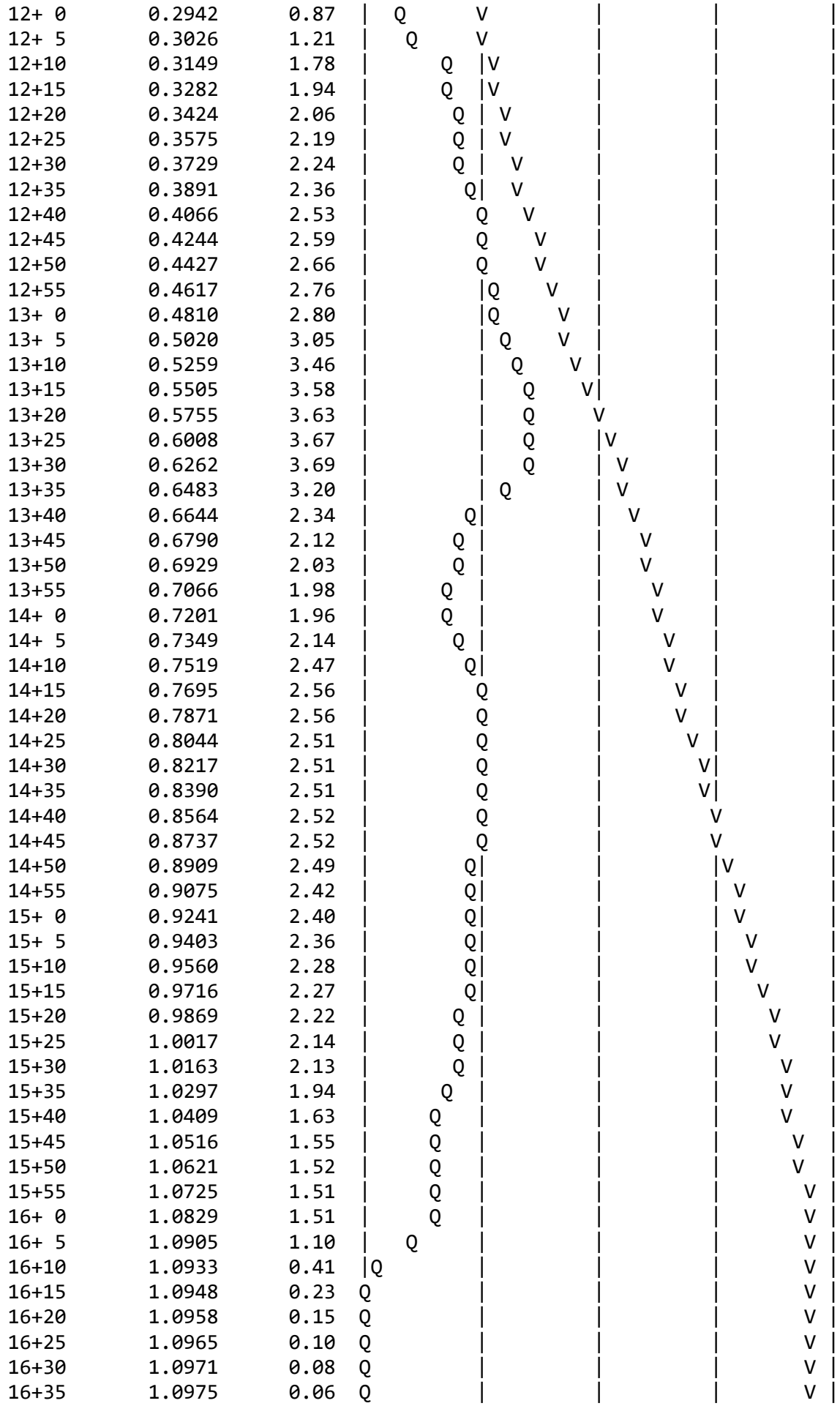

2+40	0.0117	0.08	Q				
2+45	0.0123	0.08	Q				
2+50	0.0128	0.08	Q				
2+55	0.0134	0.08	Q				
3+ 0	0.0140	0.08	Q				
3+ 5	0.0145	0.08	Q				
3+10	0.0151	0.08	Q				
3+15	0.0157	0.08	Q				
3+20	0.0162	0.08	Q				
3+25	0.0168	0.08	Q				
3+30	0.0174	0.08	Q				
3+35	0.0179	0.08	Q				
3+40	0.0185	0.08	Q				
3+45	0.0191	0.08	Q				
3+50	0.0197	0.09	Q				
3+55	0.0203	0.09	Q				
4+ 0	0.0210	0.10	Q				
4+ 5	0.0217	0.10	Q				
4+10	0.0223	0.10	Q				
4+15	0.0230	0.10	Q				
4+20	0.0237	0.10	Q				
4+25	0.0245	0.11	Q				
4+30	0.0253	0.11	Q				
4+35	0.0261	0.11	Q				
4+40	0.0269	0.11	Q				
4+45	0.0276	0.12	Q				
4+50	0.0285	0.12	QV				
4+55	0.0293	0.13	QV				
5+ 0	0.0302	0.13	QV				
5+ 5	0.0311	0.12	QV				
5+10	0.0318	0.11	QV				
5+15	0.0325	0.10	QV				
5+20	0.0332	0.11	QV				
5+25	0.0340	0.11	QV				
5+30	0.0348	0.11	QV				
5+35	0.0356	0.12	QV				
5+40	0.0365	0.13	QV				
5+45	0.0374	0.13	QV				
5+50	0.0383	0.13	QV				
5+55	0.0392	0.13	QV				
6+ 0	0.0401	0.13	QV				
6+ 5	0.0410	0.14	QV				
6+10	0.0420	0.14	QV				
6+15	0.0430	0.15	QV				
6+20	0.0440	0.15	QV				
6+25	0.0451	0.15	QV				
6+30	0.0461	0.15	QV				
6+35	0.0471	0.15	QV				
6+40	0.0482	0.16	QV				
6+45	0.0494	0.16	QV				
6+50	0.0505	0.16	QV				
6+55	0.0516	0.16	QV				
7+ 0	0.0527	0.16	QV				
7+ 5	0.0539	0.16	QV				
7+10	0.0550	0.16	QV				
7+15	0.0561	0.16	QV				

```
 7+20       0.0573      0.17  Q V       |         |         |         |
 7+25       0.0585      0.18  Q V       |         |         |         |
 7+30       0.0598      0.18  Q V       |         |         |         |
 7+35       0.0610      0.18  Q V       |         |         |         |
 7+40       0.0624      0.19  Q V       |         |         |         |
 7+45       0.0637      0.20  Q V       |         |         |         |
 7+50       0.0651      0.20  Q V       |         |         |         |
 7+55       0.0665      0.21  Q V       |         |         |         |
 8+ 0       0.0680      0.21  Q V       |         |         |         |
 8+ 5       0.0695      0.22  Q V       |         |         |         |
 8+10       0.0712      0.24  Q V       |         |         |         |
 8+15       0.0729      0.24  Q V       |         |         |         |
 8+20       0.0745      0.25  Q V       |         |         |         |
 8+25       0.0762      0.25  Q V       |         |         |         |
 8+30       0.0779      0.25  Q V       |         |         |         |
 8+35       0.0797      0.25  |QV       |         |         |         |
 8+40       0.0815      0.26  |QV       |         |         |         |
 8+45       0.0833      0.26  |QV       |         |         |         |
 8+50       0.0852      0.28  |Q V       |         |         |         |
 8+55       0.0873      0.30  |Q V       |         |         |         |
 9+ 0       0.0895      0.32  |Q V       |         |         |         |
 9+ 5       0.0924      0.43  |Q V       |         |         |         |
 9+10       0.0965      0.60  | QV       |         |         |         |
 9+15       0.1010      0.65  | QV       |         |         |         |
 9+20       0.1060      0.73  | QV       |         |         |         |
 9+25       0.1117      0.83  |  Q       |         |         |         |
 9+30       0.1177      0.87  |  QV      |         |         |         |
 9+35       0.1241      0.94  |  QV      |         |         |         |
 9+40       0.1312      1.03  |   Q      |         |         |         |
 9+45       0.1386      1.07  |   Q      |         |         |         |
 9+50       0.1464      1.13  |   QV     |         |         |         |
 9+55       0.1549      1.23  |   QV     |         |         |         |
10+ 0       0.1636      1.27  |    Q     |         |         |         |
10+ 5       0.1704      0.99  |  Q  V    |         |         |         |
10+10       0.1738      0.49  |Q    V    |         |         |         |
10+15       0.1762      0.36  |Q    V    |         |         |         |
10+20       0.1783      0.30  |Q    V    |         |         |         |
10+25       0.1802      0.27  |Q    V    |         |         |         |
10+30       0.1820      0.26  |Q    V    |         |         |         |
10+35       0.1852      0.47  |Q    V    |         |         |         |
10+40       0.1912      0.86  |  Q  V    |         |         |         |
10+45       0.1978      0.97  |  Q   V   |         |         |         |
10+50       0.2049      1.02  |   Q  V   |         |         |         |
10+55       0.2122      1.06  |   Q  V   |         |         |         |
11+ 0       0.2196      1.08  |   Q  V   |         |         |         |
11+ 5       0.2269      1.05  |   Q   V  |         |         |         |
11+10       0.2336      0.98  |  Q    V  |         |         |         |
11+15       0.2404      0.97  |  Q    V  |         |         |         |
11+20       0.2471      0.98  |  Q    V  |         |         |         |
11+25       0.2538      0.98  |  Q     V|         |         |         |
11+30       0.2607      0.99  |  Q     V|         |         |         |
11+35       0.2669      0.91  |  Q     V|         |         |         |
11+40       0.2721      0.76  |  Q     V|         |         |         |
11+45       0.2771      0.73  | Q      V|         |         |         |
11+50       0.2824      0.77  |  Q      V         |         |         |
11+55       0.2882      0.85  |  Q      V         |         |         |
```



16+40	1.0978	0.05	Q	|	|	|	V |
16+45	1.0982	0.05	Q	|	|	|	V |
16+50	1.0985	0.05	Q	|	|	|	V |
16+55	1.0989	0.05	Q	|	|	|	V |
17+ 0	1.0992	0.05	Q	|	|	|	V |
17+ 5	1.0996	0.06	Q	|	|	|	V|
17+10	1.1001	0.07	Q	|	|	|	V|
17+15	1.1007	0.08	Q	|	|	|	V|
17+20	1.1012	0.08	Q	|	|	|	V|
17+25	1.1018	0.08	Q	|	|	|	V|
17+30	1.1024	0.08	Q	|	|	|	V|
17+35	1.1029	0.08	Q	|	|	|	V|
17+40	1.1035	0.08	Q	|	|	|	V|
17+45	1.1041	0.08	Q	|	|	|	V|
17+50	1.1046	0.08	Q	|	|	|	V|
17+55	1.1051	0.07	Q	|	|	|	V|
18+ 0	1.1055	0.07	Q	|	|	|	V|
18+ 5	1.1060	0.07	Q	|	|	|	V|
18+10	1.1065	0.07	Q	|	|	|	V|
18+15	1.1069	0.07	Q	|	|	|	V|
18+20	1.1074	0.07	Q	|	|	|	V|
18+25	1.1078	0.07	Q	|	|	|	V|
18+30	1.1083	0.07	Q	|	|	|	V|
18+35	1.1087	0.06	Q	|	|	|	V|
18+40	1.1091	0.05	Q	|	|	|	V|
18+45	1.1094	0.05	Q	|	|	|	V|
18+50	1.1097	0.05	Q	|	|	|	V|
18+55	1.1100	0.04	Q	|	|	|	V|
19+ 0	1.1102	0.03	Q	|	|	|	V|
19+ 5	1.1105	0.04	Q	|	|	|	V|
19+10	1.1108	0.05	Q	|	|	|	V|
19+15	1.1111	0.05	Q	|	|	|	V|
19+20	1.1115	0.05	Q	|	|	|	V|
19+25	1.1119	0.06	Q	|	|	|	V|
19+30	1.1124	0.06	Q	|	|	|	V|
19+35	1.1128	0.06	Q	|	|	|	V|
19+40	1.1131	0.05	Q	|	|	|	V|
19+45	1.1135	0.05	Q	|	|	|	V|
19+50	1.1138	0.05	Q	|	|	|	V|
19+55	1.1141	0.04	Q	|	|	|	V|
20+ 0	1.1143	0.03	Q	|	|	|	V|
20+ 5	1.1146	0.04	Q	|	|	|	V|
20+10	1.1149	0.05	Q	|	|	|	V|
20+15	1.1152	0.05	Q	|	|	|	V|
20+20	1.1155	0.05	Q	|	|	|	V|
20+25	1.1159	0.05	Q	|	|	|	V|
20+30	1.1162	0.05	Q	|	|	|	V|
20+35	1.1166	0.05	Q	|	|	|	V|
20+40	1.1169	0.05	Q	|	|	|	V|
20+45	1.1172	0.05	Q	|	|	|	V|
20+50	1.1176	0.04	Q	|	|	|	V|
20+55	1.1178	0.04	Q	|	|	|	V|
21+ 0	1.1180	0.03	Q	|	|	|	V|
21+ 5	1.1183	0.04	Q	|	|	|	V|
21+10	1.1186	0.05	Q	|	|	|	V|
21+15	1.1190	0.05	Q	|	|	|	V|

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  21+20       1.1193      0.04  Q          |          |          |         V|
  21+25       1.1195      0.04  Q          |          |          |         V|
  21+30       1.1197      0.03  Q          |          |          |         V|
  21+35       1.1200      0.04  Q          |          |          |         V|
  21+40       1.1203      0.05  Q          |          |          |         V|
  21+45       1.1207      0.05  Q          |          |          |         V|
  21+50       1.1210      0.04  Q          |          |          |         V|
  21+55       1.1212      0.04  Q          |          |          |         V|
  22+ 0       1.1214      0.03  Q          |          |          |         V|
  22+ 5       1.1217      0.04  Q          |          |          |         V|
  22+10       1.1220      0.05  Q          |          |          |         V|
  22+15       1.1224      0.05  Q          |          |          |         V|
  22+20       1.1227      0.04  Q          |          |          |         V|
  22+25       1.1229      0.04  Q          |          |          |         V|
  22+30       1.1231      0.03  Q          |          |          |         V|
  22+35       1.1234      0.03  Q          |          |          |         V|
  22+40       1.1236      0.03  Q          |          |          |         V|
  22+45       1.1238      0.03  Q          |          |          |         V|
  22+50       1.1241      0.03  Q          |          |          |         V|
  22+55       1.1243      0.03  Q          |          |          |         V|
  23+ 0       1.1245      0.03  Q          |          |          |         V|
  23+ 5       1.1247      0.03  Q          |          |          |         V|
  23+10       1.1250      0.03  Q          |          |          |         V|
  23+15       1.1252      0.03  Q          |          |          |         V|
  23+20       1.1254      0.03  Q          |          |          |         V|
  23+25       1.1256      0.03  Q          |          |          |         V|
  23+30       1.1259      0.03  Q          |          |          |         V|
  23+35       1.1261      0.03  Q          |          |          |         V|
  23+40       1.1263      0.03  Q          |          |          |         V|
  23+45       1.1266      0.03  Q          |          |          |         V|
  23+50       1.1268      0.03  Q          |          |          |         V|
  23+55       1.1270      0.03  Q          |          |          |         V|
  24+ 0       1.1272      0.03  Q          |          |          |         V|
  24+ 5       1.1274      0.02  Q          |          |          |         V|
  24+10       1.1275      0.01  Q          |          |          |         V|
  24+15       1.1275      0.00  Q          |          |          |         V|
  24+20       1.1275      0.00  Q          |          |          |         V|
  24+25       1.1275      0.00  Q          |          |          |         V|
  24+30       1.1275      0.00  Q          |          |          |          V
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ALBERT A. WEBB ASSOCIATES

Basin Stage-Storage-Outflow Table
21-0026 - Core5 Menifee Commerce Center
Building 2 Basin

			Pumped Flowate	2-Year 24 Hour Orifice		100-year Basin Outlet	
Bottom Elevation:	1420			EX. Q2-YR, 24-HR	2.1	Peak Q-100-YR	57.1
Bottom Length:	300	FT		Opening (IN)	6	Length (FT)	6
Bottom Width:	28	FT		Opening (FT)	0.500	C	3
Bottom Slope:	0.1	%	Pump Q (cfs)	AREA (SF)	0.196		
Side Slope:	2	:1	1	# of Orifices	2		
				Total Area (SF)	0.393		
				G (FT/s^2)	32.2		
				Cd	0.66		
				Invert H (FT)	1426.5	Weir Crest	1427

#	Elevation (FT)	Depth (FT)	Storage (AC-FT)	Q (CFS)	h (FT)	Q* (CFS)	h (FT)	Q** (CFS)	Qtotal (CFS)
1.00	1,420.00	0.00	0.000	0.000	0.000	0.000	0.00	0.000	0.000
2.00	1,420.10	0.10	0.004	1.000	0.000	0.000	0.00	0.000	1.000
3.00	1,420.50	0.50	0.079	1.000	0.000	0.000	0.00	0.000	1.000
4.00	1,421.00	1.00	0.182	1.000	0.000	0.000	0.00	0.000	1.000
5.00	1,422.00	2.00	0.406	1.000	0.000	0.000	0.00	0.000	1.000
6.00	1,423.00	3.00	0.651	1.000	0.000	0.000	0.00	0.000	1.000
7.00	1,424.00	4.00	0.918	1.000	0.000	0.000	0.00	0.000	1.000
8.00	1,425.00	5.00	1.208	1.000	0.000	0.000	0.00	0.000	1.000
9.00	1,426.00	6.00	1.522	1.000	0.000	0.000	0.00	0.000	1.000
10.00	1,426.50	6.50	1.688	1.000	0.000	0.000	0.00	0.000	1.000
11.00	1,427.10	7.10	1.896	1.000	0.350	1.230	0.10	0.569	2.800
12.00	1,427.50	7.50	2.039	1.000	0.750	1.801	0.50	6.364	9.165
13.00	1,428.00	8.00	2.223	1.000	1.250	2.325	1.00	18.000	21.325

*Q determined using orifice equation, Q=CA(2gh)^0.5

**Q determined using weir equation, Q=CL(h)^3/2

FLOOD HYDROGRAPH ROUTING PROGRAM

Study date: 08/06/21

21-0026 - MENIFEE COMMERCE CENTER
BASIN ROUTING CALCULATIONS
2-YEAR, 24-HOUR STORM EVENT: BUILDING 2
FN: ROUTE242.OUT TSW

Program License Serial Number 4010

********** HYDROGRAPH INFORMATION **********

From study/file name: ONSITEPROP242.rte
**********HYDROGRAPH DATA**********
Number of intervals = 294
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 3.693 (CFS)
Total volume = 1.127 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

++
Process from Point/Station 1.000 to Point/Station 2.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 294
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)

0.000	0.000	0.000	0.000	0.000
0.100	0.004	1.000	0.001	0.007
0.500	0.079	1.000	0.076	0.082
1.000	0.182	1.000	0.179	0.185
2.000	0.406	1.000	0.403	0.409
3.000	0.651	1.000	0.648	0.654
4.000	0.918	1.000	0.915	0.921
5.000	1.208	1.000	1.205	1.211
6.000	1.522	1.000	1.519	1.525
6.500	1.688	1.000	1.685	1.691
7.100	1.896	2.800	1.886	1.906
7.500	2.039	9.165	2.007	2.071
8.000	2.223	21.325	2.150	2.296

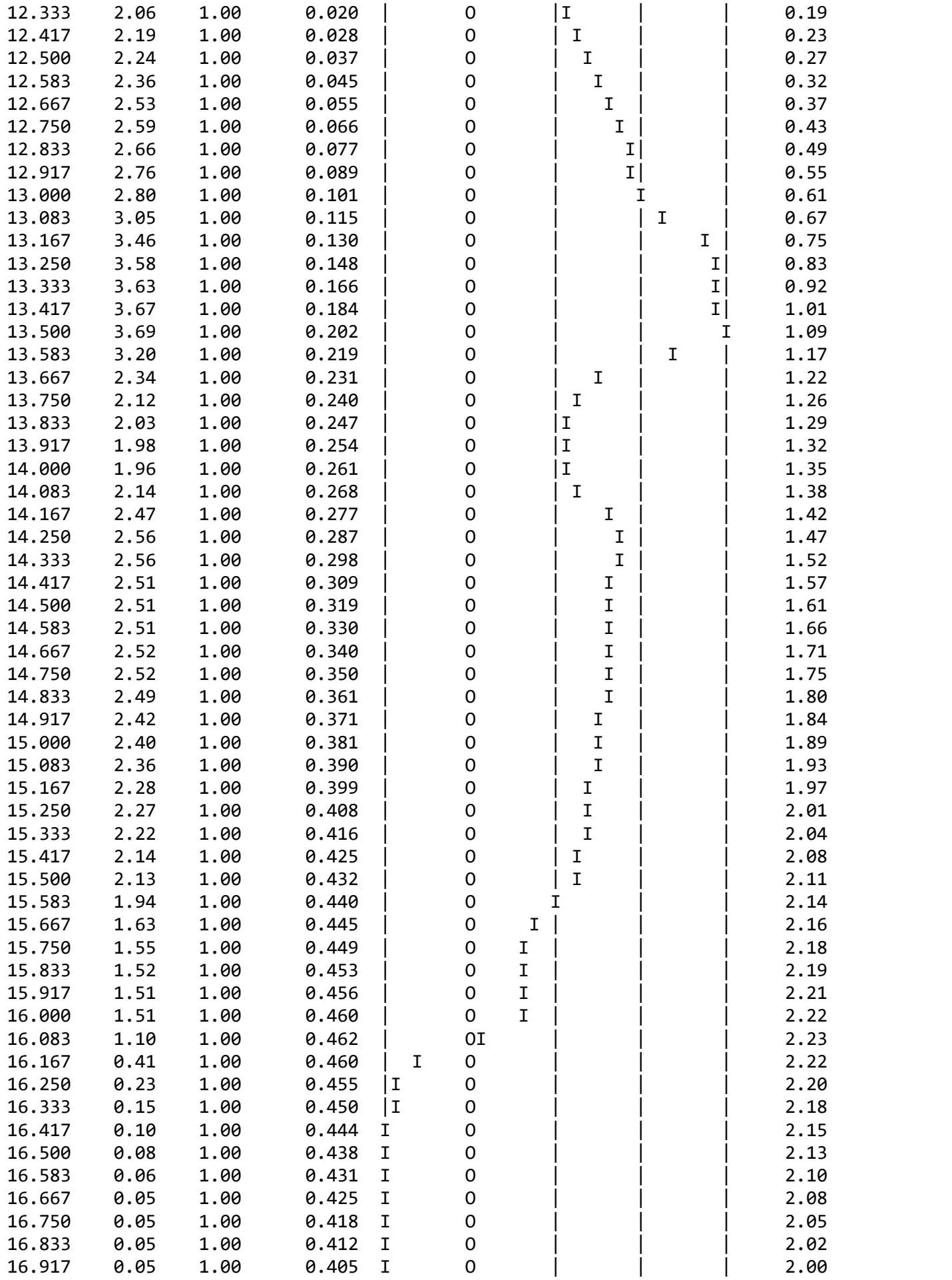
Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	0.9	1.85	2.77	3.69	Depth (Ft.)
0.083	0.01	0.00	0.000	O	|	|	|	|	0.00
0.167	0.03	0.02	0.000	O	|	|	|	|	0.00
0.250	0.03	0.03	0.000	O	|	|	|	|	0.00
0.333	0.04	0.03	0.000	O	|	|	|	|	0.00
0.417	0.04	0.04	0.000	O	|	|	|	|	0.00
0.500	0.05	0.05	0.000	O	|	|	|	|	0.00
0.583	0.05	0.05	0.000	O	|	|	|	|	0.00
0.667	0.05	0.05	0.000	O	|	|	|	|	0.00
0.750	0.05	0.05	0.000	O	|	|	|	|	0.00
0.833	0.05	0.05	0.000	O	|	|	|	|	0.01
0.917	0.06	0.06	0.000	O	|	|	|	|	0.01
1.000	0.06	0.06	0.000	O	|	|	|	|	0.01
1.083	0.06	0.06	0.000	O	|	|	|	|	0.01
1.167	0.05	0.06	0.000	O	|	|	|	|	0.01
1.250	0.05	0.05	0.000	O	|	|	|	|	0.01
1.333	0.05	0.05	0.000	O	|	|	|	|	0.01
1.417	0.05	0.05	0.000	O	|	|	|	|	0.01
1.500	0.05	0.05	0.000	O	|	|	|	|	0.00
1.583	0.05	0.05	0.000	O	|	|	|	|	0.00
1.667	0.05	0.05	0.000	O	|	|	|	|	0.00
1.750	0.05	0.05	0.000	O	|	|	|	|	0.00
1.833	0.05	0.05	0.000	O	|	|	|	|	0.01
1.917	0.06	0.06	0.000	O	|	|	|	|	0.01
2.000	0.06	0.06	0.000	O	|	|	|	|	0.01
2.083	0.06	0.06	0.000	O	|	|	|	|	0.01
2.167	0.07	0.07	0.000	O	|	|	|	|	0.01
2.250	0.07	0.07	0.000	O	|	|	|	|	0.01
2.333	0.07	0.07	0.000	O	|	|	|	|	0.01
2.417	0.07	0.07	0.000	O	|	|	|	|	0.01
2.500	0.07	0.07	0.000	O	|	|	|	|	0.01
2.583	0.07	0.07	0.000	O	|	|	|	|	0.01
2.667	0.08	0.07	0.000	O	|	|	|	|	0.01
2.750	0.08	0.08	0.000	O	|	|	|	|	0.01
2.833	0.08	0.08	0.000	O	|	|	|	|	0.01
2.917	0.08	0.08	0.000	O	|	|	|	|	0.01

3.000	0.08	0.08	0.000	O	|	|	|	0.01
3.083	0.08	0.08	0.000	O	|	|	|	0.01
3.167	0.08	0.08	0.000	O	|	|	|	0.01
3.250	0.08	0.08	0.000	O	|	|	|	0.01
3.333	0.08	0.08	0.000	O	|	|	|	0.01
3.417	0.08	0.08	0.000	O	|	|	|	0.01
3.500	0.08	0.08	0.000	O	|	|	|	0.01
3.583	0.08	0.08	0.000	O	|	|	|	0.01
3.667	0.08	0.08	0.000	O	|	|	|	0.01
3.750	0.08	0.08	0.000	O	|	|	|	0.01
3.833	0.09	0.08	0.000	O	|	|	|	0.01
3.917	0.09	0.09	0.000	O	|	|	|	0.01
4.000	0.10	0.10	0.000	O	|	|	|	0.01
4.083	0.10	0.10	0.000	O	|	|	|	0.01
4.167	0.10	0.10	0.000	O	|	|	|	0.01
4.250	0.10	0.10	0.000	O	|	|	|	0.01
4.333	0.10	0.10	0.000	O	|	|	|	0.01
4.417	0.11	0.11	0.000	O	|	|	|	0.01
4.500	0.11	0.11	0.000	O	|	|	|	0.01
4.583	0.11	0.11	0.000	O	|	|	|	0.01
4.667	0.11	0.11	0.000	O	|	|	|	0.01
4.750	0.12	0.11	0.000	O	|	|	|	0.01
4.833	0.12	0.12	0.000	|O	|	|	|	0.01
4.917	0.13	0.12	0.000	|O	|	|	|	0.01
5.000	0.13	0.13	0.001	|O	|	|	|	0.01
5.083	0.12	0.13	0.001	|O	|	|	|	0.01
5.167	0.11	0.11	0.000	O	|	|	|	0.01
5.250	0.10	0.10	0.000	O	|	|	|	0.01
5.333	0.11	0.10	0.000	O	|	|	|	0.01
5.417	0.11	0.11	0.000	O	|	|	|	0.01
5.500	0.11	0.11	0.000	O	|	|	|	0.01
5.583	0.12	0.12	0.000	|O	|	|	|	0.01
5.667	0.13	0.12	0.000	|O	|	|	|	0.01
5.750	0.13	0.13	0.001	|O	|	|	|	0.01
5.833	0.13	0.13	0.001	|O	|	|	|	0.01
5.917	0.13	0.13	0.001	|O	|	|	|	0.01
6.000	0.13	0.13	0.001	|O	|	|	|	0.01
6.083	0.14	0.13	0.001	|O	|	|	|	0.01
6.167	0.14	0.14	0.001	|O	|	|	|	0.01
6.250	0.15	0.14	0.001	|O	|	|	|	0.01
6.333	0.15	0.15	0.001	|O	|	|	|	0.01
6.417	0.15	0.15	0.001	|O	|	|	|	0.01
6.500	0.15	0.15	0.001	|O	|	|	|	0.01
6.583	0.15	0.15	0.001	|O	|	|	|	0.02
6.667	0.16	0.16	0.001	|O	|	|	|	0.02
6.750	0.16	0.16	0.001	|O	|	|	|	0.02
6.833	0.16	0.16	0.001	|O	|	|	|	0.02
6.917	0.16	0.16	0.001	|O	|	|	|	0.02
7.000	0.16	0.16	0.001	|O	|	|	|	0.02
7.083	0.16	0.16	0.001	|O	|	|	|	0.02
7.167	0.16	0.16	0.001	|O	|	|	|	0.02
7.250	0.16	0.16	0.001	|O	|	|	|	0.02
7.333	0.17	0.17	0.001	|O	|	|	|	0.02
7.417	0.18	0.17	0.001	|O	|	|	|	0.02
7.500	0.18	0.18	0.001	|O	|	|	|	0.02
7.583	0.18	0.18	0.001	|O	|	|	|	0.02

```
 7.667    0.19    0.19      0.001  |O      |       |       |       |     0.02
 7.750    0.20    0.19      0.001  |O      |       |       |       |     0.02
 7.833    0.20    0.20      0.001  |O      |       |       |       |     0.02
 7.917    0.21    0.20      0.001  |O      |       |       |       |     0.02
 8.000    0.21    0.21      0.001  |O      |       |       |       |     0.02
 8.083    0.22    0.22      0.001  |O      |       |       |       |     0.02
 8.167    0.24    0.23      0.001  |OI     |       |       |       |     0.02
 8.250    0.24    0.24      0.001  | O     |       |       |       |     0.02
 8.333    0.25    0.24      0.001  | O     |       |       |       |     0.02
 8.417    0.25    0.25      0.001  | O     |       |       |       |     0.02
 8.500    0.25    0.25      0.001  | O     |       |       |       |     0.02
 8.583    0.25    0.25      0.001  | O     |       |       |       |     0.02
 8.667    0.26    0.25      0.001  | O     |       |       |       |     0.03
 8.750    0.26    0.26      0.001  | O     |       |       |       |     0.03
 8.833    0.28    0.27      0.001  | O     |       |       |       |     0.03
 8.917    0.30    0.29      0.001  | O     |       |       |       |     0.03
 9.000    0.32    0.31      0.001  | O     |       |       |       |     0.03
 9.083    0.43    0.37      0.001  |  O    |       |       |       |     0.04
 9.167    0.60    0.50      0.002  |   OI  |       |       |       |     0.05
 9.250    0.65    0.62      0.002  |    O  |       |       |       |     0.06
 9.333    0.73    0.68      0.003  |    OI |       |       |       |     0.07
 9.417    0.83    0.77      0.003  |     OI|       |       |       |     0.08
 9.500    0.87    0.84      0.003  |      O|       |       |       |     0.08
 9.583    0.94    0.90      0.004  |      OI       |       |       |     0.09
 9.667    1.03    0.98      0.004  |       O       |       |       |     0.10
 9.750    1.07    1.00      0.004  |       OI      |       |       |     0.10
 9.833    1.13    1.00      0.005  |       OI      |       |       |     0.11
 9.917    1.23    1.00      0.006  |       O I     |       |       |     0.11
10.000    1.27    1.00      0.008  |       O I     |       |       |     0.12
10.083    0.99    1.00      0.009  |       O       |       |       |     0.13
10.167    0.49    1.00      0.007  |   I   O       |       |       |     0.12
10.250    0.36    0.88      0.004  |  I   O|       |       |       |     0.09
10.333    0.30    0.37      0.001  | IO    |       |       |       |     0.04
10.417    0.27    0.30      0.001  | O     |       |       |       |     0.03
10.500    0.26    0.27      0.001  | O     |       |       |       |     0.03
10.583    0.47    0.36      0.001  |  OI   |       |       |       |     0.04
10.667    0.86    0.64      0.003  |    O I|       |       |       |     0.06
10.750    0.97    0.89      0.004  |      OI       |       |       |     0.09
10.833    1.02    0.99      0.004  |       O       |       |       |     0.10
10.917    1.06    1.00      0.004  |       OI      |       |       |     0.10
11.000    1.08    1.00      0.005  |       OI      |       |       |     0.10
11.083    1.05    1.00      0.005  |       OI      |       |       |     0.11
11.167    0.98    1.00      0.005  |       O       |       |       |     0.11
11.250    0.97    1.00      0.005  |       O       |       |       |     0.11
11.333    0.98    1.00      0.005  |       O       |       |       |     0.11
11.417    0.98    1.00      0.005  |       O       |       |       |     0.10
11.500    0.99    1.00      0.005  |       O       |       |       |     0.10
11.583    0.91    1.00      0.004  |      IO       |       |       |     0.10
11.667    0.76    0.90      0.004  |     IO|       |       |       |     0.09
11.750    0.73    0.75      0.003  |     O |       |       |       |     0.08
11.833    0.77    0.75      0.003  |     O |       |       |       |     0.07
11.917    0.85    0.80      0.003  |     OI|       |       |       |     0.08
12.000    0.87    0.85      0.003  |      O|       |       |       |     0.09
12.083    1.21    1.00      0.004  |       O I     |       |       |     0.10
12.167    1.78    1.00      0.008  |       O      I|       |       |     0.12
12.250    1.94    1.00      0.014  |       O       I       |       |     0.15
```



17.000	0.05	1.00	0.399	I	O	|	|	|	1.97
17.083	0.06	1.00	0.392	I	O	|	|	|	1.94
17.167	0.07	1.00	0.386	I	O	|	|	|	1.91
17.250	0.08	1.00	0.379	I	O	|	|	|	1.88
17.333	0.08	1.00	0.373	I	O	|	|	|	1.85
17.417	0.08	1.00	0.367	I	O	|	|	|	1.82
17.500	0.08	1.00	0.360	I	O	|	|	|	1.80
17.583	0.08	1.00	0.354	I	O	|	|	|	1.77
17.667	0.08	1.00	0.348	I	O	|	|	|	1.74
17.750	0.08	1.00	0.341	I	O	|	|	|	1.71
17.833	0.08	1.00	0.335	I	O	|	|	|	1.68
17.917	0.07	1.00	0.329	I	O	|	|	|	1.65
18.000	0.07	1.00	0.322	I	O	|	|	|	1.63
18.083	0.07	1.00	0.316	I	O	|	|	|	1.60
18.167	0.07	1.00	0.309	I	O	|	|	|	1.57
18.250	0.07	1.00	0.303	I	O	|	|	|	1.54
18.333	0.07	1.00	0.296	I	O	|	|	|	1.51
18.417	0.07	1.00	0.290	I	O	|	|	|	1.48
18.500	0.07	1.00	0.284	I	O	|	|	|	1.45
18.583	0.06	1.00	0.277	I	O	|	|	|	1.42
18.667	0.05	1.00	0.271	I	O	|	|	|	1.40
18.750	0.05	1.00	0.264	I	O	|	|	|	1.37
18.833	0.05	1.00	0.258	I	O	|	|	|	1.34
18.917	0.04	1.00	0.251	I	O	|	|	|	1.31
19.000	0.03	1.00	0.244	I	O	|	|	|	1.28
19.083	0.04	1.00	0.238	I	O	|	|	|	1.25
19.167	0.05	1.00	0.231	I	O	|	|	|	1.22
19.250	0.05	1.00	0.224	I	O	|	|	|	1.19
19.333	0.05	1.00	0.218	I	O	|	|	|	1.16
19.417	0.06	1.00	0.211	I	O	|	|	|	1.13
19.500	0.06	1.00	0.205	I	O	|	|	|	1.10
19.583	0.06	1.00	0.199	I	O	|	|	|	1.07
19.667	0.05	1.00	0.192	I	O	|	|	|	1.04
19.750	0.05	1.00	0.186	I	O	|	|	|	1.02
19.833	0.05	1.00	0.179	I	O	|	|	|	0.99
19.917	0.04	1.00	0.172	I	O	|	|	|	0.95
20.000	0.03	1.00	0.166	I	O	|	|	|	0.92
20.083	0.04	1.00	0.159	I	O	|	|	|	0.89
20.167	0.05	1.00	0.152	I	O	|	|	|	0.86
20.250	0.05	1.00	0.146	I	O	|	|	|	0.82
20.333	0.05	1.00	0.139	I	O	|	|	|	0.79
20.417	0.05	1.00	0.133	I	O	|	|	|	0.76
20.500	0.05	1.00	0.126	I	O	|	|	|	0.73
20.583	0.05	1.00	0.120	I	O	|	|	|	0.70
20.667	0.05	1.00	0.113	I	O	|	|	|	0.67
20.750	0.05	1.00	0.107	I	O	|	|	|	0.63
20.833	0.04	1.00	0.100	I	O	|	|	|	0.60
20.917	0.04	1.00	0.093	I	O	|	|	|	0.57
21.000	0.03	1.00	0.087	I	O	|	|	|	0.54
21.083	0.04	1.00	0.080	I	O	|	|	|	0.51
21.167	0.05	1.00	0.074	I	O	|	|	|	0.47
21.250	0.05	1.00	0.067	I	O	|	|	|	0.44
21.333	0.04	1.00	0.060	I	O	|	|	|	0.40
21.417	0.04	1.00	0.054	I	O	|	|	|	0.37
21.500	0.03	1.00	0.047	I	O	|	|	|	0.33
21.583	0.04	1.00	0.041	I	O	|	|	|	0.29

21.667	0.05	1.00	0.034	I	O	|	|	|	0.26
21.750	0.05	1.00	0.027	I	O	|	|	|	0.22
21.833	0.04	1.00	0.021	I	O	|	|	|	0.19
21.917	0.04	1.00	0.014	I	O	|	|	|	0.15
22.000	0.03	1.00	0.008	I	O	|	|	|	0.12
22.083	0.04	0.59	0.002	I	O	|	|	|	0.06
22.167	0.05	0.08	0.000	O	|	|	|	|	0.01
22.250	0.05	0.05	0.000	O	|	|	|	|	0.00
22.333	0.04	0.05	0.000	O	|	|	|	|	0.00
22.417	0.04	0.04	0.000	O	|	|	|	|	0.00
22.500	0.03	0.04	0.000	O	|	|	|	|	0.00
22.583	0.03	0.03	0.000	O	|	|	|	|	0.00
22.667	0.03	0.03	0.000	O	|	|	|	|	0.00
22.750	0.03	0.03	0.000	O	|	|	|	|	0.00
22.833	0.03	0.03	0.000	O	|	|	|	|	0.00
22.917	0.03	0.03	0.000	O	|	|	|	|	0.00
23.000	0.03	0.03	0.000	O	|	|	|	|	0.00
23.083	0.03	0.03	0.000	O	|	|	|	|	0.00
23.167	0.03	0.03	0.000	O	|	|	|	|	0.00
23.250	0.03	0.03	0.000	O	|	|	|	|	0.00
23.333	0.03	0.03	0.000	O	|	|	|	|	0.00
23.417	0.03	0.03	0.000	O	|	|	|	|	0.00
23.500	0.03	0.03	0.000	O	|	|	|	|	0.00
23.583	0.03	0.03	0.000	O	|	|	|	|	0.00
23.667	0.03	0.03	0.000	O	|	|	|	|	0.00
23.750	0.03	0.03	0.000	O	|	|	|	|	0.00
23.833	0.03	0.03	0.000	O	|	|	|	|	0.00
23.917	0.03	0.03	0.000	O	|	|	|	|	0.00
24.000	0.03	0.03	0.000	O	|	|	|	|	0.00
24.083	0.02	0.03	0.000	O	|	|	|	|	0.00
24.167	0.01	0.02	0.000	O	|	|	|	|	0.00
24.250	0.00	0.01	0.000	O	|	|	|	|	0.00
24.333	0.00	0.00	0.000	O	|	|	|	|	0.00
24.417	0.00	0.00	0.000	O	|	|	|	|	0.00
24.500	0.00	0.00	0.000	O	|	|	|	|	0.00
24.583	0.00	0.00	0.000	O	|	|	|	|	0.00

**********HYDROGRAPH DATA**********

Number of intervals = 295
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 1.000 (CFS)
Total volume = 1.127 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

Appendix 8: Source Control

Pollutant Sources/Source Control Checklist

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

How to use this worksheet (also see instructions in Section G of the WQMP Template):

1. Review Column 1 and identify which of these potential sources of stormwater pollutants apply to your site. Check each box that applies.
2. Review Column 2 and incorporate all of the corresponding applicable BMPs in your WQMP Exhibit.
3. Review Columns 3 and 4 and incorporate all of the corresponding applicable permanent controls and operational BMPs in your WQMP. Use the format shown in Table G.1on page 23 of this WQMP Template. Describe your specific BMPs in an accompanying narrative, and explain any special conditions or situations that required omitting BMPs or substituting alternative BMPs for those shown here.

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
☒ A. **On-site storm drain inlets**	☒ **Locations of inlets.**	☒ **Mark all inlets with the words "Only Rain Down the Storm Drain" or similar. Catch Basin Markers may be available from the Riverside County Flood Control and Water Conservation District, call 951.955.1200 to verify.**	☒ **Maintain and periodically repaint or replace inlet markings.** ☒ **Provide stormwater pollution prevention information to new site owners, lessees, or operators.** ☒ **See applicable operational BMPs in Fact Sheet SC-44, "Drainage System Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com** ☒ **Include the following in lease agreements: "Tenant shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains."**
☒ B. **Interior floor drains and elevator shaft sump pumps**		☒ **State that interior floor drains and elevator shaft sump pumps will be plumbed to sanitary sewer.**	☒ **Inspect and maintain drains to prevent blockages and overflow.**
☐ C. **Interior parking garages**		☐ **State that parking garage floor drains will be plumbed to the sanitary sewer.**	☐ **Inspect and maintain drains to prevent blockages and overflow.**

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
☒ D1. **Need for future indoor & structural pest control**		☒ **Note building design features that discourage entry of pests.**	☒ **Provide Integrated Pest Management information to owners, lessees, and operators.**
☒ D2. **Landscape/ Outdoor Pesticide Use**	☐ **Show locations of native trees or areas of shrubs and ground cover to be undisturbed and retained.** ☐ **Show self-retaining landscape areas, if any.** ☒ **Show stormwater treatment and hydrograph modification management BMPs. (See instructions in Chapter 3, Step 5 and guidance in Chapter 5.)**	**State that final landscape plans will accomplish all of the following.** ☒ **Preserve existing native trees, shrubs, and ground cover to the maximum extent possible.** ☒ **Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution.** ☒ **Where landscaped areas are used to retain or detain stormwater, specify plants that are tolerant of saturated soil conditions.** ☒ **Consider using pest-resistant plants, especially adjacent to hardscape.** **To insure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.**	☒ **Maintain landscaping using minimum or no pesticides.** ☒ **See applicable operational BMPs in "What you should know for…..Landscape and Gardening"** at http://rcflood.org/stormwater/**Error! Hyperlink reference not valid.** ☒ **Provide IPM information to new owners, lessees and operators.**

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
☐ E. **Pools, spas, ponds, decorative fountains, and other water features.**	☐ **Show location of water feature and a sanitary sewer cleanout in an accessible area within 10 feet. (Exception: Public pools must be plumbed according to County Department of Environmental Health Guidelines.)**	**If the Co-Permittee requires pools to be plumbed to the sanitary sewer, place a note on the plans and state in the narrative that this connection will be made according to local requirements.**	☐ **See applicable operational BMPs in** "Guidelines for Maintaining Your Swimming Pool, Jacuzzi and Garden Fountain" at http://rcflood.org/stormwater/
☐ F. **Food service**	☐ **For restaurants, grocery stores, and other food service operations, show location (indoors or in a covered area outdoors) of a floor sink or other area for cleaning floor mats, containers, and equipment.** ☐ **On the drawing, show a note that this drain will be connected to a grease interceptor before discharging to the sanitary sewer.**	☐ **Describe the location and features of the designated cleaning area.** ☐ **Describe the items to be cleaned in this facility and how it has been sized to insure that the largest items can be accommodated.**	☐ **See the brochure, "**The Food Service Industry Best Management Practices for: Restaurants, Grocery Stores, Delicatessens and Bakeries" at http://rcflood.org/stormwater/ **Provide this brochure to new site owners, lessees, and operators.**
☒ G. **Refuse areas**	☒ **Show where site refuse and recycled materials will be handled and stored for pickup. See local municipal requirements for sizes and other details of refuse areas.** ☒ **If dumpsters or other receptacles are outdoors, show how the designated area will be covered, graded, and paved to prevent run-on and show locations of berms to prevent runoff from the area.** ☒ **Any drains from dumpsters, compactors, and tallow bin areas shall be connected to a grease removal device before discharge to sanitary sewer.**	☒ **State how site refuse will be handled and provide supporting detail to what is shown on plans.** ☒ **State that signs will be posted on or near dumpsters with the words "Do not dump hazardous materials here" or similar.**	☒ **State how the following will be implemented:** **Provide adequate number of receptacles. Inspect receptacles regularly; repair or replace leaky receptacles. Keep receptacles covered. Prohibit/prevent dumping of liquid or hazardous wastes. Post "no hazardous materials" signs. Inspect and pick up litter daily and clean up spills immediately. Keep spill control materials available on-site. See Fact Sheet SC-34, "Waste Handling and Disposal" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
☒ H. **Industrial processes.**	☒ **Show process area.**	☒ **If industrial processes are to be located on site, state: "All process activities to be performed indoors. No processes to drain to exterior or to storm drain system."**	☒ **See Fact Sheet SC-10, "Non-Stormwater Discharges" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com** See the brochure "Industrial & Commercial Facilities Best Management Practices for: Industrial, Commercial Facilities" at http://rcflood.org/stormwater/

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
❑ I. **Outdoor storage of equipment or materials. (See rows J and K for source control measures for vehicle cleaning, repair, and maintenance.)**	❑ **Show any outdoor storage areas, including how materials will be covered. Show how areas will be graded and bermed to prevent run-on or run-off from area.** ❑ **Storage of non-hazardous liquids shall be covered by a roof and/or drain to the sanitary sewer system, and be contained by berms, dikes, liners, or vaults.** ❑ **Storage of hazardous materials and wastes must be in compliance with the local hazardous materials ordinance and a Hazardous Materials Management Plan for the site.**	**Include a detailed description of materials to be stored, storage areas, and structural features to prevent pollutants from entering storm drains.** **Where appropriate, reference documentation of compliance with the requirements of Hazardous Materials Programs for:** ▪ **Hazardous Waste Generation** ▪ **Hazardous Materials Release Response and Inventory** ▪ **California Accidental Release (CalARP)** ▪ **Aboveground Storage Tank** ▪ **Uniform Fire Code Article 80 Section 103(b) & (c) 1991** ▪ **Underground Storage Tank** **www.cchealth.org/groups/hazmat/**	❑ **See the Fact Sheets SC-31, "Outdoor Liquid Container Storage" and SC-33, "Outdoor Storage of Raw Materials " in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
❑ J. **Vehicle and Equipment Cleaning**	❑ **Show on drawings as appropriate:** **(1) Commercial/industrial facilities having vehicle/equipment cleaning needs shall either provide a covered, bermed area for washing activities or discourage vehicle/equipment washing by removing hose bibs and installing signs prohibiting such uses.** **(2) Multi-dwelling complexes shall have a paved, bermed, and covered car wash area (unless car washing is prohibited on-site and hoses are provided with an automatic shut-off to discourage such use).** **(3) Washing areas for cars, vehicles, and equipment shall be paved, designed to prevent run-on to or runoff from the area, and plumbed to drain to the sanitary sewer.** **(4) Commercial car wash facilities shall be designed such that no runoff from the facility is discharged to the storm drain system. Wastewater from the facility shall discharge to the sanitary sewer, or a wastewater reclamation system shall be installed.**	❑ **If a car wash area is not provided, describe any measures taken to discourage on-site car washing and explain how these will be enforced.**	**Describe operational measures to implement the following (if applicable):** ❑ **Washwater from vehicle and equipment washing operations shall not be discharged to the storm drain system.** Refer to "Outdoor Cleaning Activities and Professional Mobile Service Providers" for many of the Potential Sources of Runoff Pollutants categories below. Brochure can be found at http://rcflood.org/stormwater/ ❑**Car dealerships and similar may rinse cars with water only.**

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
❑ K. **Vehicle/Equipment Repair and Maintenance**	❑ **Accommodate all vehicle equipment repair and maintenance indoors. Or designate an outdoor work area and design the area to prevent run-on and runoff of stormwater.** ❑ **Show secondary containment for exterior work areas where motor oil, brake fluid, gasoline, diesel fuel, radiator fluid, acid-containing batteries or other hazardous materials or hazardous wastes are used or stored. Drains shall not be installed within the secondary containment areas.** ❑ **Add a note on the plans that states either (1) there are no floor drains, or (2) floor drains are connected to wastewater pretreatment systems prior to discharge to the sanitary sewer and an industrial waste discharge permit will be obtained.**	❑ **State that no vehicle repair or maintenance will be done outdoors, or else describe the required features of the outdoor work area.** ❑ **State that there are no floor drains or if there are floor drains, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements.** ❑ **State that there are no tanks, containers or sinks to be used for parts cleaning or rinsing or, if there are, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements.**	**In the Stormwater Control Plan, note that all of the following restrictions apply to use the site:** ❑ **No person shall dispose of, nor permit the disposal, directly or indirectly of vehicle fluids, hazardous materials, or rinsewater from parts cleaning into storm drains.** ❑ **No vehicle fluid removal shall be performed outside a building, nor on asphalt or ground surfaces, whether inside or outside a building, except in such a manner as to ensure that any spilled fluid will be in an area of secondary containment. Leaking vehicle fluids shall be contained or drained from the vehicle immediately.** ❑ **No person shall leave unattended drip parts or other open containers containing vehicle fluid, unless such containers are in use or in an area of secondary containment.** Refer to "Automotive Maintenance & Car Care Best Management Practices for Auto Body Shops, Auto Repair Shops, Car Dealerships, Gas Stations and Fleet Service Operations". Brochure can be found at http://rcflood.org/stormwater/ Refer to Outdoor Cleaning Activities and Professional Mobile Service Providers for many of the Potential Sources of Runoff Pollutants categories below. Brochure can be found at http://rcflood.org/stormwater/

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
❑ L. **Fuel Dispensing Areas**	❑ **Fueling areas[6] shall have impermeable floors (i.e., portland cement concrete or equivalent smooth impervious surface) that are: a) graded at the minimum slope necessary to prevent ponding; and b) separated from the rest of the site by a grade break that prevents run-on of stormwater to the maximum extent practicable.** ❑ **Fueling areas shall be covered by a canopy that extends a minimum of ten feet in each direction from each pump. [Alternative: The fueling area must be covered and the cover's minimum dimensions must be equal to or greater than the area within the grade break or fuel dispensing area[1].] The canopy [or cover] shall not drain onto the fueling area.**		❑ **The property owner shall dry sweep the fueling area routinely.** ❑ **See the Fact Sheet SD-30 , "Fueling Areas" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**

[6] **The fueling area shall be defined as the area extending a minimum of 6.5 feet from the corner of each fuel dispenser or the length at which the hose and nozzle assembly may be operated plus a minimum of one foot, whichever is greater.**

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
☒ M. **Loading Docks**	☒ **Show a preliminary design for the loading dock area, including roofing and drainage. Loading docks shall be covered and/or graded to minimize run-on to and runoff from the loading area. Roof downspouts shall be positioned to direct stormwater away from the loading area. Water from loading dock areas shall be drained to the sanitary sewer, or diverted and collected for ultimate discharge to the sanitary sewer.** ☒ **Loading dock areas draining directly to the sanitary sewer shall be equipped with a spill control valve or equivalent device, which shall be kept closed during periods of operation.** ☒ **Provide a roof overhang over the loading area or install door skirts (cowling) at each bay that enclose the end of the trailer.**		☒ **Move loaded and unloaded items indoors as soon as possible.** ☒ **See Fact Sheet SC-30, "Outdoor Loading and Unloading," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
☒ N. **Fire Sprinkler Test Water**		☒ **Provide a means to drain fire sprinkler test water to the sanitary sewer.**	☒ **See the note in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**
☒ O. **Miscellaneous Drain or Wash Water or Other Sources** ☐ **Boiler drain lines** ☐ **Condensate drain lines** ☐ **Rooftop equipment** ☐ **Drainage sumps** ☐ **Roofing, gutters, and trim.** ☐ **Other sources**		☒ **Boiler drain lines shall be directly or indirectly connected to the sanitary sewer system and may not discharge to the storm drain system.** ☒ **Condensate drain lines may discharge to landscaped areas if the flow is small enough that runoff will not occur. Condensate drain lines may not discharge to the storm drain system.** ☒ **Rooftop equipment with potential to produce pollutants shall be roofed and/or have secondary containment.** ☒ **Any drainage sumps on-site shall feature a sediment sump to reduce the quantity of sediment in pumped water.** ☒ **Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff.** **Include controls for other sources as specified by local reviewer.**	

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
☒ P. **Plazas, sidewalks, and parking lots.**			☒ **Sweep plazas, sidewalks, and parking lots regularly to prevent accumulation of litter and debris. Collect debris from pressure washing to prevent entry into the storm drain system. Collect washwater containing any cleaning agent or degreaser and discharge to the sanitary sewer not to a storm drain.**

Appendix 9: O&M

Operation and Maintenance Plan and Documentation of Finance, Maintenance and Recording Mechanisms

RECORDING REQUESTED BY:

CITY OF MENIFEE

FOR REFERENCE

AND WHEN RECORDED MAIL TO:

CITY OF MENIFEE
CITY CLERK
29714 HAUN ROAD
MENIFEE, CA 92586-6540

SPACE ABOVE THIS LINE FOR RECORDER'S USE

WATER QUALITY MANAGEMENT PLAN AND STORMWATER BEST MANAGEMENT PRACTICES OPERATION, TRANSFER, MAINTENANCE AND RIGHT OF ENTRY AGREEMENT

PROJECT NAME: _____

PROPERTY OWNER NAME: _____

PROPERTY ADDRESS: _____

_____

APN: _____

THIS AGREEMENT is made and entered into in

_____, California, this _____ day of

_____, 201___, by and between

_____, herein after

referred to as "Owner", and the CITY OF MENIFEE, a municipal corporation, located in the County of Riverside, State of California hereinafter referred to as "CITY";

WHEREAS, the City is a Co-Permittee for discharging stormwater from its MS4 facilities pursuant to the Santa Ana Regional Water Quality Control Board Order No. R8-2010-0033, MS4 NPDES Permit No. CAS 618033. Under the terms of the permit the City is required to enforce the provisions of the permit within its jurisdiction. The requirements contained in this agreement are intended to achieve the goals of the MS4 permit;

WHEREAS, the Owner owns real property ("Property) in the City of Menifee, County of Riverside, State of California, more specifically described in Exhibit "A" and depicted in Exhibit "B", each of which exhibits is attached hereto and incorporated herein by this reference;

WHEREAS, at the time of initial approval of development project known as:

_____ within the Property described herein, the City required the project to employ Best Management Practices, hereinafter referred to as "BMPs," to minimize pollutants in urban runoff;

WHEREAS, the Owner has chosen to install and/or implement BMPs as described in the Water Quality Management Plan, on file with the City, hereinafter referred to as "WQMP," to minimize pollutants in urban runoff and to minimize other adverse impacts of urban runoff;

WHEREAS, said WQMP has been certified by the Owner and reviewed and accepted by the City;

WHEREAS, said BMPs, with installation and/or implementation on private property and draining only private property, are part of a private facility with all maintenance or replacement, therefore, the sole responsibility of the Owner in accordance with the terms of this Agreement;

WHEREAS, the Owner is aware that periodic and continuous maintenance, including, but not necessarily limited to, filter material replacement and sediment removal, is required to assure peak performance of all BMPs in the WQMP and that, furthermore, such maintenance activity will require compliance with all Local, State, or Federal laws and regulations, including those pertaining to confined space and waste disposal methods, in effect at the time such maintenance occurs;

NOW THEREFORE, it is mutually stipulated and agreed as follows:

1. Right of Access: Owner hereby provides the City of Menifee designee complete access, of any duration, to the BMPs and their immediate vicinity at any time, upon reasonable notice, or in the event of emergency, as determined by the City's Engineer, no advance notice, for the purpose of inspection, sampling, testing of the Device, and in case of emergency to direct all necessary repairs or other preventative measures at owner's expense in accordance with the procedures set forth in paragraph 3 below. City shall make every effort at all times to minimize or avoid interference with Owner's use of the Property.

2. Responsibility for Operation and Maintenance of BMPs: Owner shall use its best efforts diligently to maintain all BMPs in a manner assuring peak performance at all times. All reasonable precautions shall be exercised by Owner and Owner's representative or contractor in the removal and extraction of any material(s) from the BMPs and the ultimate disposal of the material(s) in a manner consistent with all relevant laws and regulations in effect at the time. As may be requested from time to time by the City, the Owner shall provide the City with documentation identifying the material(s) removed, the quantity, and disposal destination.

3. City Maintenance at Owner's Expense: In the event Owner, or its successors or assigns, fails to accomplish the necessary maintenance contemplated by this

Agreement, the City may cause such maintenance to be conducted on Owner's Property at Owner's expense if Owner does not commence and diligently work to perform the maintenance within five (5) days of receiving written notice from the City, in accordance with paragraph 10 below, of Owner's failure to comply with the terms of this Agreement. The City may charge the entire cost and expense of any maintenance undertaken by the City, whether performed as a response to an emergency situation or following five (5) day written notice by the City, to the Owner or Owner's successors or assigns, including administrative costs, attorney's fees and interest thereon at the maximum rate authorized by the Civil Code from the Date of the notice of expense until paid in full. The City, at its sole election, may take these costs to be a lien upon the property that may be collected at the same time and in the same manner as ordinary municipal taxes as provided in Government Code section 38773.5. Nothing in this section or this Agreement creates an obligation by the City to maintain or repair any BMP, nor does this section prohibit the City from pursuing other legal recourse against Owner.

4. Surety Bond: The City may require the owner to post security in form and for a time period satisfactory to the City to guarantee the performance of the obligations stated herein. Should the Owner fail to perform the obligations under the Agreement, the City may, in the case of a cash bond, act for the Owner using the proceeds from it, or in the case of a surety bond, require the sureties to perform the obligations of the Agreement. As an additional remedy, the City's Engineer may withdraw any previous stormwater-related approval with respect to the property on which BMPs have been installed and/or implemented until such time as Owner repays to City its reasonable costs incurred in accordance with paragraph 3 above.

5. Recording: This agreement shall be recorded in the Office of the Recorder of Riverside County, California, at the expense of the Owner and shall constitute notice to all successors and assigns of the title to said Property of the obligation herein set forth, and also a lien in such amount as will fully reimburse the City, including interest as herein above set forth, subject to foreclosure in event of default in payment.

6. Attorney's Fees: In event of legal action occasioned by any default or action of the Owner, or its successors or assigns, then the Owner and its successors or assigns agree(s) to pay all costs incurred by the City in enforcing the terms of this Agreement, including reasonable attorney's fees and costs, and that the same shall become a part of the lien against said Property.

7. Covenant: It is the intent of the parties hereto that burdens and benefits herein undertaken shall constitute covenants that run with said Property and constitute a lien there against.

8. Binding on Successors: The obligations herein undertaken shall be binding upon the heirs, successors, executors, administrators and assigns of the parties hereto. The term "Owner" shall include not only the present Owner, but also its heirs, successors, executors, administrators, and assigns. Owner shall notify any successor to title of all or part of the Property about the existence of this Agreement. Owner shall provide such notice prior to such successor obtaining an interest in all or part of the Property. Owner shall provide a copy of such notice to the City at the same time such notice is provided to the successor.

9. Time of the Essence: Time is of the essence in the performance of this Agreement.

10. Notice: Any notice to a party required or called for in this Agreement shall be served in person, or by deposit in the U.S. Mail, first class postage prepaid, to the address set forth below. Notice(s) shall be deemed effective upon receipt, or seventy-two (72) hours after deposit in the U.S. Mail, whichever is earlier. A party may change a notice address only by providing written notice thereof to the other party.

IN WITNESS THEREOF, the parties hereto have affixed their signatures as of the date first written above.

IF TO CITY:

City of Menifee

29714 Haun Road

Menifee, CA 92586-6540

IF TO OWNER:

_____

_____

_____

_____

CITY:

By:_____
Robert A. Johnson,
City Manager

APPROVED AS TO FORM:

_____
Jeffery T. Melching, City Attorney

ATTEST:

_____
Sarah Manwaring, City Clerk

OWNER:

By:_____
NAME

Title:_____

OWNER:

By:_____
NAME

Title:_____

NOTARY ACKNOWLEDGEMENTS ON FOLLOWING PAGE

EXHIBIT A
(Legal Description)

EXHIBIT B
(Map/Illustration)

Maintenance Plan for
Core 5 – Menifee Commerce Center

Date:_____

Project Address and Cross Streets_____

Assessor's Parcel No.: _____

Property Owner: _____ Phone No.:_____

Designated Contact: _____ Phone No.:_____

Mailing Address:_____

The property contains (three) water quality drainage facilities located as described below and as shown in the attached site plan.

- **West Basin (Building-1)** is located along Sherman Road.
- **Lift Station and Contech Bioscape (Building-1)** are located along Sherman Road in the southeast corner

- **West Basin (Building-2)** is located along Trumble Road.
- **Lift Station and Contech Bioscape (Building-2)** are located along Trumble Road.

I. Routine Maintenance Activities

Primary maintenance activities include vegetation management and sediment removal, although mosquito abatement is a concern if the basin is designed to include permanent pools of standing water. Routine maintenance activities, and the frequency at which they will be conducted, are shown in Table 1.

Table 1
Routine Maintenance Activities for Facility Areas

No.	Maintenance Task	Frequency of Task
1	Remove obstructions, debris and trash from facility areas and dispose of properly.	Monthly, or as needed after storm events
2	Inspect facility areas to ensure that it drains between storms and within five days after rainfall.	Monthly, or as needed after storm events
3	Inspect inlets for channels, soil exposure or other evidence of erosion. Clear obstructions and remove sediment.	Monthly, or as needed after storm events
4	Remove and replace all dead and diseased vegetation.	Twice a year
5	Maintain vegetation and the irrigation system. Prune and weed to keep facility areas neat and orderly in appearance.	Before wet season begins, or as needed
6	Check that mulch in bioscape is at appropriate depth (3 inches per soil specifications) and replenish as necessary before wet season begins.	Monthly
7	Inspect facility areas using the attached inspection checklist.	Monthly, or after large storm events, and after removal of accumulated debris or material

II. Prohibitions

The use of pesticides and quick release fertilizers shall be minimized, and the principles of integrated pest management (IPM) followed:

1. Employ non-chemical controls (biological, physical and cultural controls) before using chemicals to treat a pest problem.
2. Prune plants properly and at the appropriate time of year.
3. Provide adequate irrigation for landscape plants. Do not over water.
4. Limit fertilizer use unless soil testing indicates a deficiency. Slow-release or organic fertilizer is preferable. Check with municipality for specific requirements.
5. Pest control should avoid harming non-target organisms, or negatively affecting air and water quality and public health. Apply chemical controls only when monitoring indicates that preventative and non-chemical methods are not keeping pests below acceptable levels. When pesticides are required, apply the least toxic and the least persistent pesticide that will provide adequate pest control. Do not apply pesticides on a prescheduled basis.
6. Sweep up spilled fertilizer and pesticides. Do not wash away or bury such spills.
7. Do not over apply pesticide. Spray only where the infestation exists. Follow the manufacturer's instructions for mixing and applying materials.
8. Only licensed, trained pesticide applicators shall apply pesticides.
9. Apply pesticides at the appropriate time to maximize their effectiveness and minimize the likelihood of discharging pesticides into runoff. With the exception of pre-emergent pesticides, avoid application if rain is expected.
10. Unwanted/unused pesticides shall be disposed as hazardous waste.

Standing water shall not remain in the treatment and/or hydromodification management measures for more than 3 days, to prevent mosquito generation. Should any mosquito issues arise, contact the applicable vector control department as needed for assistance (see below). Mosquito larvicides shall be applied only when absolutely necessary, as indicated by the applicable vector control contact, and then only by a licensed professional or contractor.

III. Vector Control Contacts

Northwest Riverside County
Northwest Mosquito & Vector Control District
951.340.9792

Riverside County
Vector Control at Riverside County Environmental Health
951.766.9454

IV. Inspections

The attached Bio-Retention Basin Inspection and Maintenance Checklist shall be used to conduct inspections monthly (or as needed), identify needed maintenance, and record maintenance that is conducted.

Basin, Lift Station, and Bioscape Facility Areas
(proprietary instructions for Bioscape added after this checklist)
Inspection and Maintenance Checklist

Property Address: _____ Property Owner: _____

Treatment Measure No.: _____ Date of Inspection: _____ Type of Inspection: □ Monthly □ Pre-Wet Season
□ After heavy runoff □ End of Wet Season

Inspector(s): _____ □ Other:_____

Defect	**Conditions When Maintenance Is Needed**	**Maintenance Needed? (Y/N)**	**Comments** (Describe maintenance completed and if needed maintenance was not conducted, note when it will be done)	**Results Expected When Maintenance Is Performed**
1. Standing Water	When water stands in the facility areas between storms and does not drain within five days after rainfall.			There should be no areas of standing water once inflow has ceased. Any of the following may apply: sediment or trash blockages removed from facility areas, improved grade from head to foot of bioscape area, or replaced underdrains.
2. Trash and Debris Accumulation	Trash and debris accumulated in the facility areas.			Trash and debris removed from facility areas and disposed of properly.
3. Sediment	Evidence of sedimentation in facility areas.			Material removed so that there is no clogging or blockage. Material is disposed of properly.
4. Erosion	Channels have formed around inlets, there are areas of bare soil, and/or other evidence of erosion.			Obstructions and sediment removed so that water flows freely and disperses over a wide area. Obstructions and sediment are disposed of properly.
5. Vegetation	Vegetation is dead, diseased and/or overgrown.			Vegetation is healthy and attractive in appearance.
6. Mulch	Mulch is missing or patchy in appearance. Areas of bare earth are exposed, or mulch layer is less than 3 inches in depth.			All bare earth is covered, except mulch is kept 6 inches away from trunks of trees and shrubs. Mulch is even in appearance, at a depth of 3 inches.
7. Miscellaneous	Any condition not covered above that needs attention for the areas to function as designed.			Meet the design specifications.

Appendix 10: Educational Materials

BMP Fact Sheets, Maintenance Guidelines and Other End-User BMP Information

BMP TRAINING ACKNOWLEDGEMENT FORM

By signing this form, the undersigned certifies that he/she has received the listed materials and training for the BMP's that he or she is responsible for operation and maintenance or responsible to meet the requirements. The undersigned also acknowledged that punitive actions may be imposed if he or she fails to comply. The punitive actions can be in terms of monetary fine or termination of the contract or the rights that is transferred to the undersigned through contracts. If necessary, the owner or public agencies may complete the corrective actions and billed the undersigned.

Name (Print): _____
Business Name:_____
Title/Position: _____
Signature: _____ Date: _____

Item	Training Description	Related BMP(s)	Handout Materials	Initials	Comments

CONTECH®
ENGINEERED SOLUTIONS

Filterra®
High Performance Bioretention

The experts you need to solve your stormwater challenges

Contech is the leader in stormwater solutions, helping engineers, contractors and owners with infrastructure and land development projects throughout North America.

With our responsive team of stormwater experts, local regulatory expertise and flexible solutions, Contech is the trusted partner you can count on for stormwater management solutions.

Your Contech Team

STORMWATER CONSULTANT

It's my job to recommend the best solution to meet permitting requirements.

STORMWATER DESIGN ENGINEER

I work with consultants to design the best approved solution to meet your project's needs.

REGULATORY MANAGER

I understand the local stormwater regulations and what solutions will be approved.

SALES ENGINEER

I make sure our solutions meet the needs of the contractor during construction.

Contech is your partner in stormwater management solutions

Low Impact Development in a Small Footprint – Filterra®

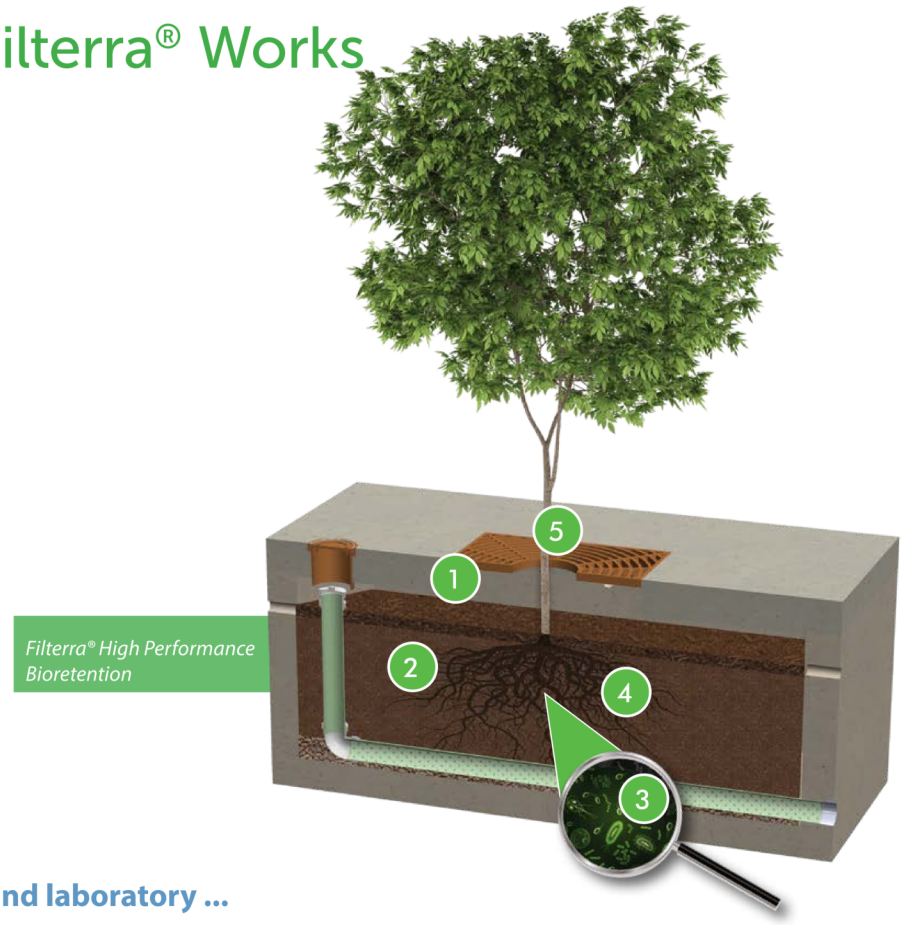
Filterra is an engineered high-performance bioretention system. While it operates similar to traditional bioretention, its high flow media allows for a reduction in footprint of up to 95% versus traditional bioretention practices. Filterra provides a Low Impact Development (LID) solution for tight, highly developed sites such as urban development projects, commercial parking lots, residential streets, and streetscapes. Its small footprint also reduces installation and life cycle costs versus traditional bioretention. Filterra can be configured in many different ways to enhance site aesthetics, integrate with other LID practices, or increase runoff reduction through infiltration below or downstream of the system.

At the Manchester Stormwater Park seen above, the Filterra systems surrounding the central courtyard allowed for the creation of a community space with parking, sidewalks, and benches in a quaint downtown area. A traditional bioretention system treating the same drainage area would have occupied the entire park area leaving no room for these amenities.

filterra® Bioretention Systems

filterra® Bioscape®

How the Filterra® Works



Tested in the field and laboratory ...

1. Stormwater enters the Filterra through a pipe, curb inlet, or sheet flow and ponds over the pretreatment mulch layer, capturing heavy sediment and debris. Organics and microorganisms within the mulch trap and degrade metals and hydrocarbons. The mulch also provides water retention for the system's vegetation.

2. Stormwater flows through engineered Filterra media which filters fine pollutants and nutrients. Organic material in the media removes dissolved metals and acts as a food source for root-zone microorganisms. Treated water exits through an underdrain pipe or infiltrates (if designed accordingly).

3. Rootzone microorganisms digest and transform pollutants into forms easily absorbed by plants.

4. Plant roots absorb stormwater and pollutants that were transformed by microorganisms, regenerating the media's pollutant removal capacity. The roots grow, provide a hospitable environment for the rootzone microorganisms and penetrate the media, maintaining hydraulic conductivity.

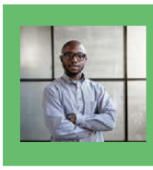
5. The plant trunk and foliage utilize nutrients such as Nitrogen and Phosphorus for plant health, sequester heavy metals into the biomass, and provide evapotranspiration of residual water within the system.

Plants and organic material are vital to the long term performance of bioretention systems

Using nature to facilitate Stormwater Management

Filterra® Features and Benefits

FEATURE	BENEFITS
High biofiltration media flow rate (up to 175"/hr+)	Greatly reduced footprint versus traditional bioretention and LID solutions
Filterra system is packaged, including all components necessary for system performance	Quality control for easy, fast and successful installation
Quick and easy maintenance	Low lifecycle costs
Variety of configurations and aesthetic options	Integrates easily into any site or landscape plan
Natural stormwater management processes featuring organics and vegetation	Meets Low Impact Development requirements and ensures long-term performance



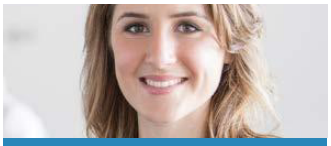
The Filterra system can be configured with many different aesthetic options

Select Filterra® Approvals

Filterra is approved through numerous local, state and federal verification programs, including:

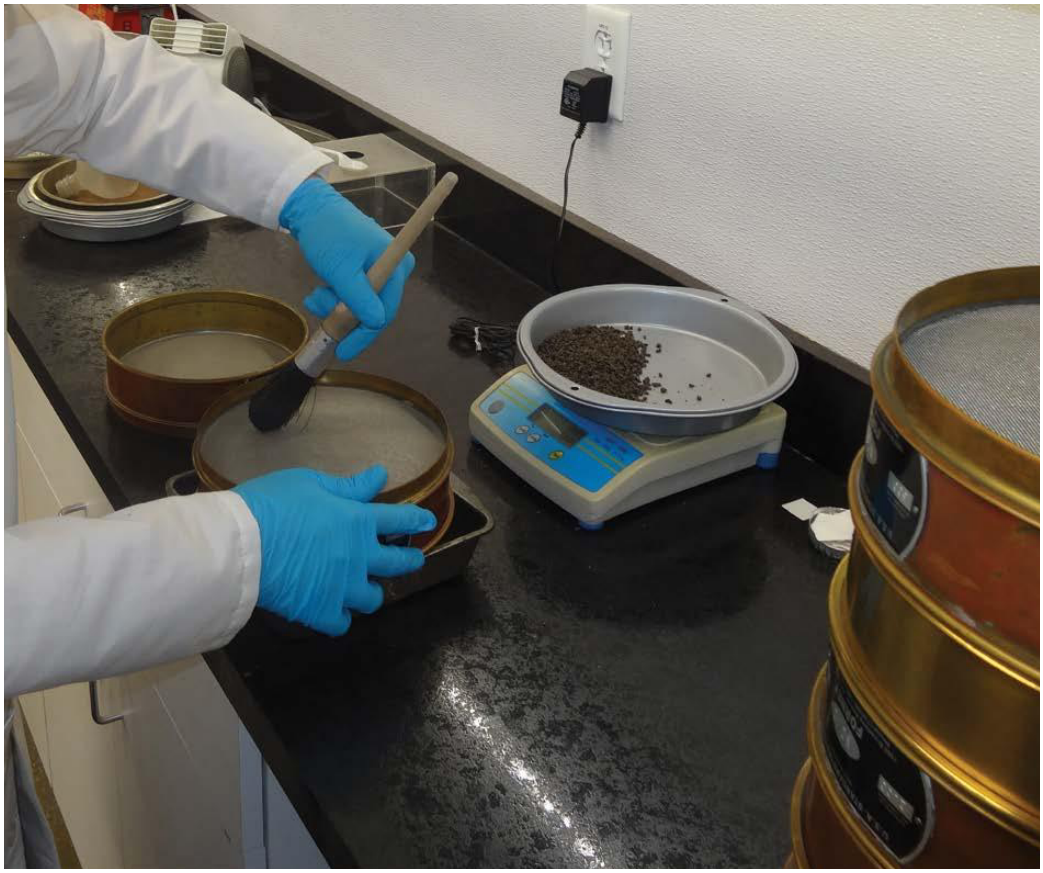
- New Jersey Department of Environmental Protection (NJ DEP)
- Washington Department of Ecology (GULD) – Basic, Enhanced, Phosphorus, and Oil
- Maryland Department of the Environment - Environmental Site Design (ESD)
- Texas Commission on Environmental Quality (TCEQ)
- Virginia Department of Environmental Quality (VA DEQ)
- Maine Department of Environmental Protection (ME DEP)
- Atlanta, GA Regional Commission
- Los Angeles County, CA - Alternate to Attachment H
- City of Portland, Oregon Bureau of Environmental Services
- North Carolina Department of Environmental Quality (NC DEQ)

Filterra® Performance Testing Results



APPLICATION TIPS

- The Filterra system has been tested under industry standard protocols and has proven its pollutant removal performance and system longevity.
- Contech invests significant resources in media blending calibration and product testing to ensure our media meets our strict performance specifications every time.
- Keep regulators and owners happy by selecting a product with predictable and proven maintenance longevity.



POLLUTANT OF CONCERN	MEDIAN REMOVAL EFFICIENCY	MEDIAN EFFLUENT CONCENTRATION (MG/L)
Total Suspended Solids (TSS)	86%	3.3
Total Phosphorus - TAPE (TP)	70%	0.05
Total Nitrogen (TN)	34%	0.54
Total Copper (TCu)	55%	0.004
Total Dissolved Copper	43%	0.003
Total Zinc (TZn)	56%	0.04
Total Dissolved Zinc	54%	0.1
Total Zinc (TZn)	56%	0.04
Total Petroleum Hydrocarbons	87%	0.71

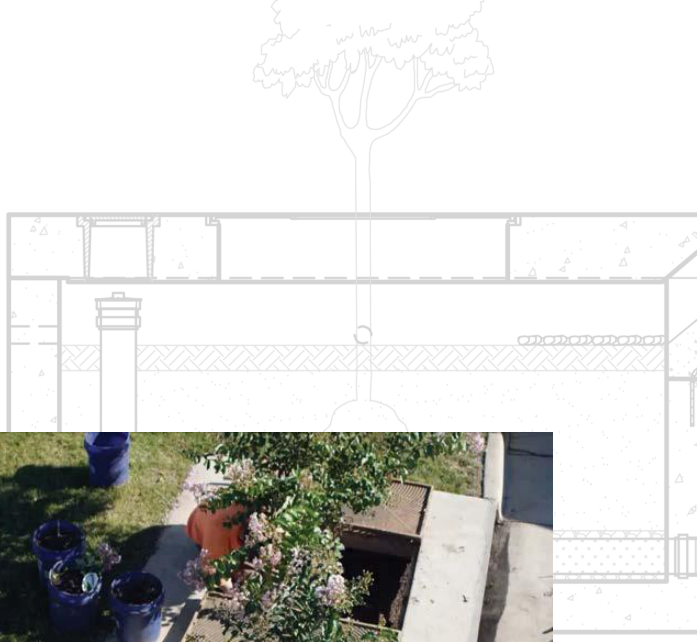
Each batch of Filterra® media has been extensively tested to ensure consistent performance every time.

Sources:
UVA (TARP) Field Study - 2006
Herrera (TAPE) Study - 2009
Herrera (TAPE) Study - 2014
NC State Study - 2015

Note: Some jurisdictions recognize higher removal rates. Contact your Contech Stormwater Consultant for performance expectations.

Field tested and performance verified

Filterra® Maintenance



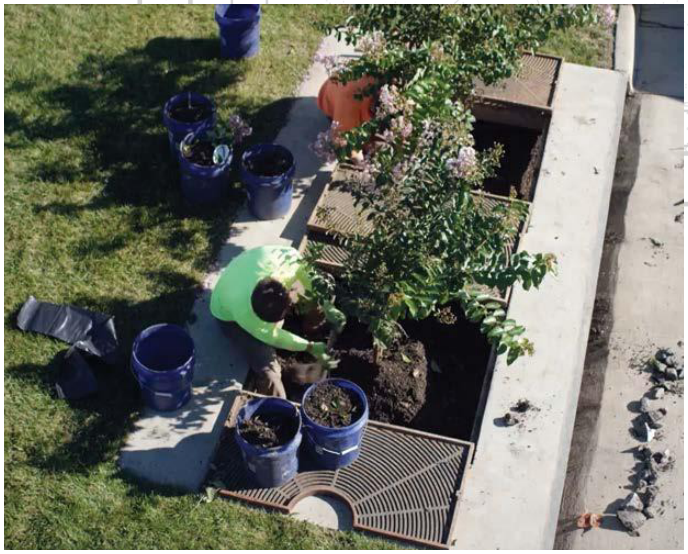
Activation and first year of maintenance is included with every system.*

With proper routine maintenance, the engineered media within the Filterra system should last as long as traditional bioretention media. Routine maintenance is included by the manufacturer on all Filterra systems for the first year after activation.* This includes a maximum of 2 visits to remove debris, replace pretreatment mulch, and prune the vegetation.

Maintenance is low-cost, low-tech and simple:

- Remove trash, sediment, and mulch
- Replace with a fresh 3" layer of mulch
- No confined space entry or special tools
- Easily performed by landscape contractor or facilities maintenance provider

** Some exclusions may apply.*



Filterra offers high performance bioretention for advanced pollutant removal with easy maintenance.

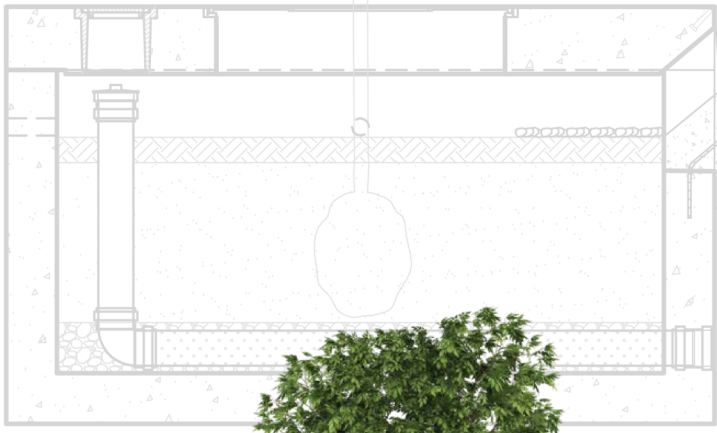
Plant health evaluation and pruning is important to encourage growth.

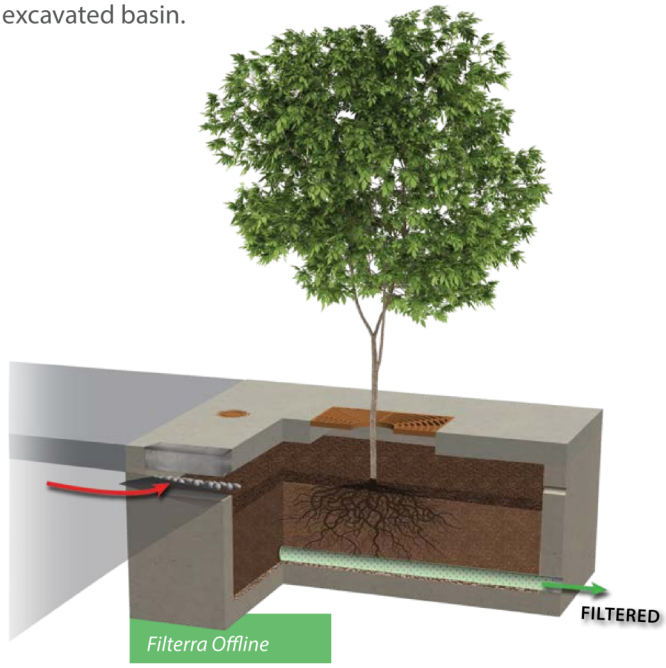
All stormwater treatment systems require maintenance for effective operation.

Filterra® Configurations

Multiple system configurations integrate with site hydraulic design and layout ...

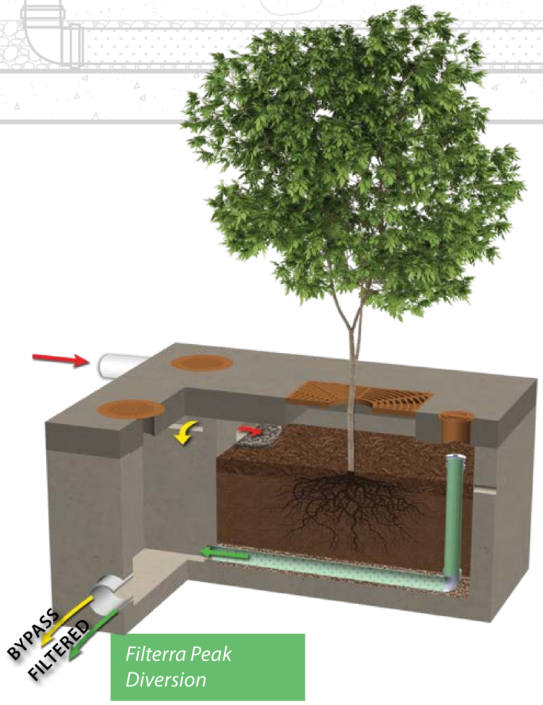
The Filterra is available in a variety of precast configurations as well as Filterra Bioscape, which can be installed directly into an excavated basin.



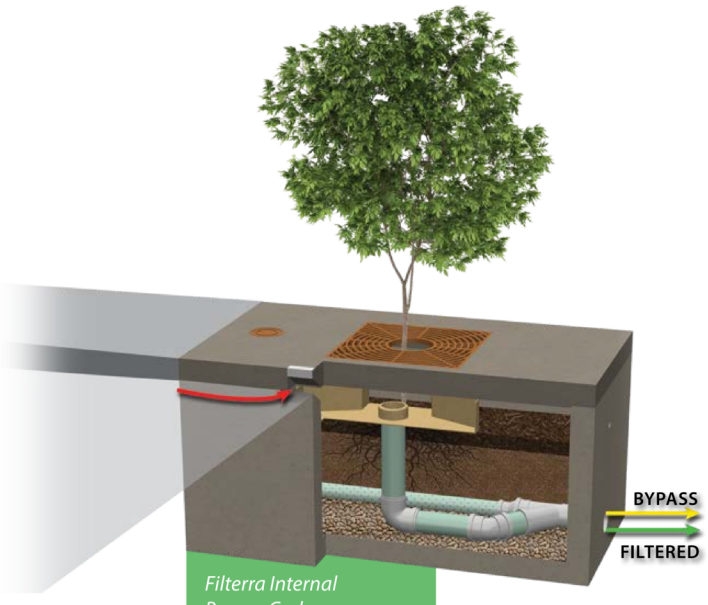


Filterra Offline

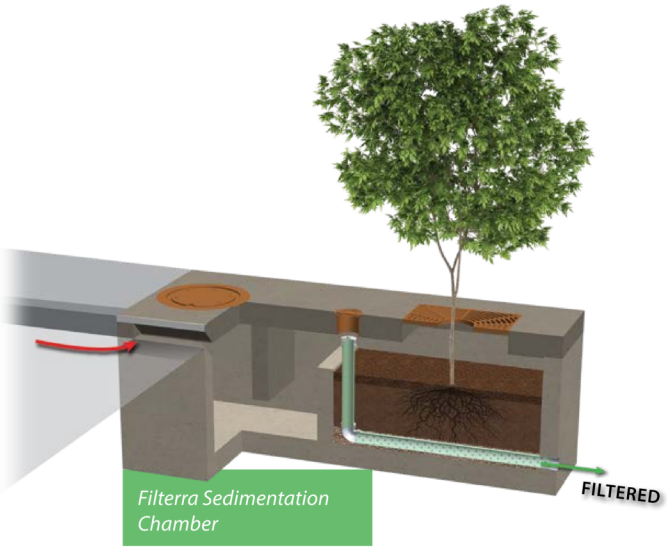
Bypass via downstream catch basin.



Filterra Peak Diversion



Filterra Internal Bypass Curb



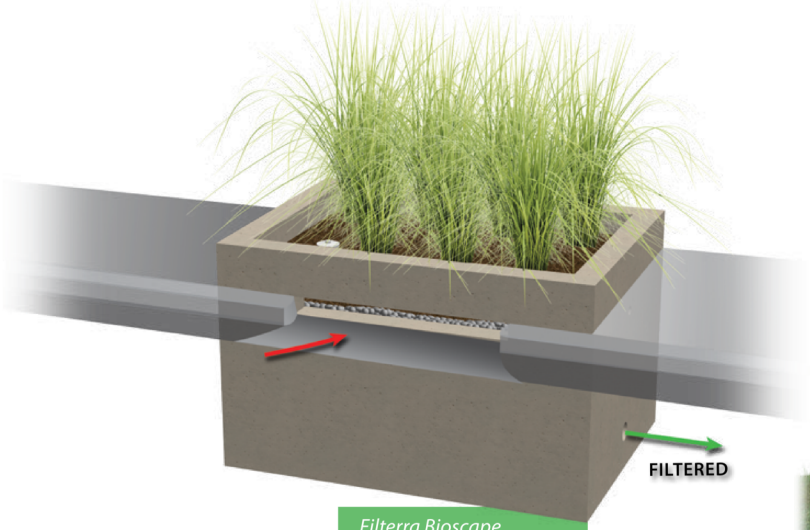
Filterra Sedimentation Chamber

Bypass via downstream catch basin.

**Additional configurations available, including offline - pipe, peak diversion - grate, and internal bypass curb-chamber.*

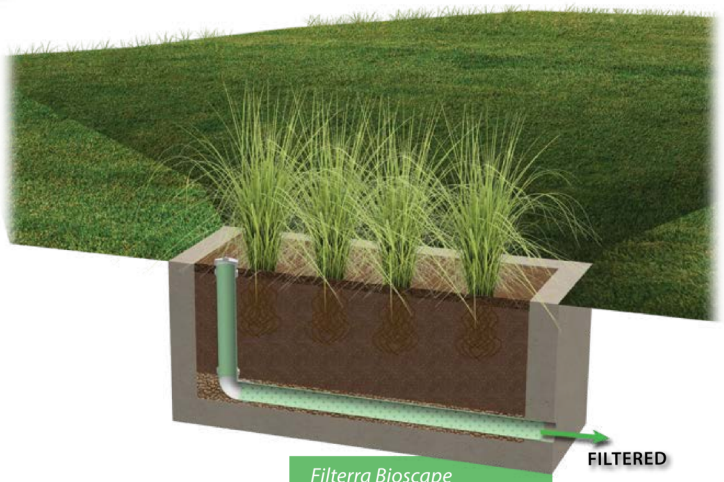
Multiple configurations allow for easy site integration

Filterra® Bioscape® Configurations



Filterra Bioscape Vault Offline

Bypass via downstream catch basin.



Filterra Bioscape Vault Basin

Bypass via upstream structure. Multiple inlet options.

Filterra Bioscape

Bypass via upstream structure. Multiple inlet options.

**Additional configurations available, including bioscape vault offline pipe.*

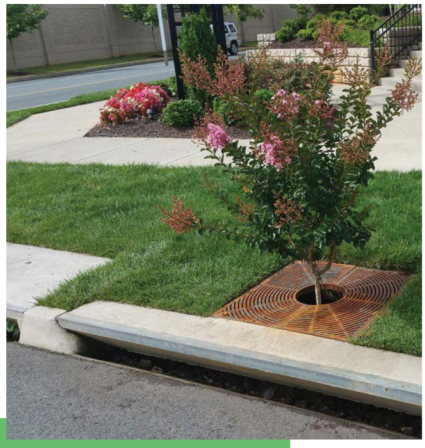
Filterra® Aesthetic Options

Multiple aesthetic options to enhance the appearance and integrate with landscaping ...

Standard Tree Grate

Custom/Decorative Tree Grate

Full Grate with Grasses



Recessed Top Slab

Open Top Planter - Filterra Bioscape

Street Tree

An aesthetic solution to meet your bioretention needs

Filterra® Bioscape®

Large-scale Filterra that can be customized to your site ...

- Ideal for Filterra systems greater than 300 square feet
- Design with or without containment structure
- Incorporate infiltration directly below the system, where required
- Combine with upstream storage or downstream infiltration
- Use as an alternative to larger regional traditional bioretention systems
- Easily add pretreatment Hydrodynamic Separator for large-scale or heavy pollutant loading applications

A partner you can rely on

STORMWATER SOLUTIONS

PIPE SOLUTIONS

STRUCTURES SOLUTIONS

Few companies offer the wide range of high-quality stormwater resources you can find with us — state-of-the-art products, decades of expertise, and all the maintenance support you need to operate your system cost-effectively.

THE CONTECH WAY

Contech® Engineered Solutions provides innovative, cost-effective site solutions to engineers, contractors, and developers on projects across North America. Our portfolio includes bridges, drainage, erosion control, retaining wall, sanitary sewer and stormwater management products.

TAKE THE NEXT STEP

For more information: www.ContechES.com

CONTECH® ENGINEERED SOLUTIONS

Get social with us:

800-338-1122 | www.ContechES.com

Filterra Owner's Manual

filterra®

Bioretention Systems

CONTECH®
ENGINEERED SOLUTIONS

Table of Contents

Enclosed

Local Area Filterra Plant List

Introduction

Thank you for your purchase of the Filterra® Bioretention System. Filterra is a specially engineered stormwater treatment system incorporating high performance biofiltration media to remove pollutants from stormwater runoff. The system's biota (vegetation and soil microorganisms) then further breakdown and absorb captured pollutants. All components of the system work together to provide a sustainable long-term solution for treating stormwater runoff.

The Filterra system has been delivered to you with protection in place to resist intrusion of construction related sediment which can contaminate the biofiltration media and result in inadequate system performance. These protection devices are intended as a best practice and cannot fully prevent contamination. It is the purchaser's responsibility to provide adequate measures to prevent construction related runoff from entering the Filterra system.

Included with your purchase is Activation of the Filterra system by the manufacturer as well as a 1-year warranty from delivery of the system and 1-year of routine maintenance (mulch replacement, debris removal, and pruning of vegetation) up to twice during the first year after activation.

Design and Installation

Each project presents different scopes for the use of Filterra systems. Information and help may be provided to the design engineer during the planning process. Correct Filterra box sizing (by rainfall region) is essential to predict pollutant removal rates for a given area. The engineer shall submit calculations for approval by the local jurisdiction. The contractor is responsible for the correct installation of Filterra units as shown in approved plans. A comprehensive installation manual is available at www.ContechES.com.

Activation Overview

Activation of the Filterra system is a procedure completed by the manufacturer to place the system into working condition. This involves the following items:

- Removal of construction runoff protection devices
- Planting of the system's vegetation
- Placement of pretreatment mulch layer using mulch certified for use in Filterra systems.

Activation MUST be provided by the manufacturer to ensure proper site conditions are met for Activation, proper installation of the vegetation, and use of pretreatment mulch certified for use in Filterra systems.

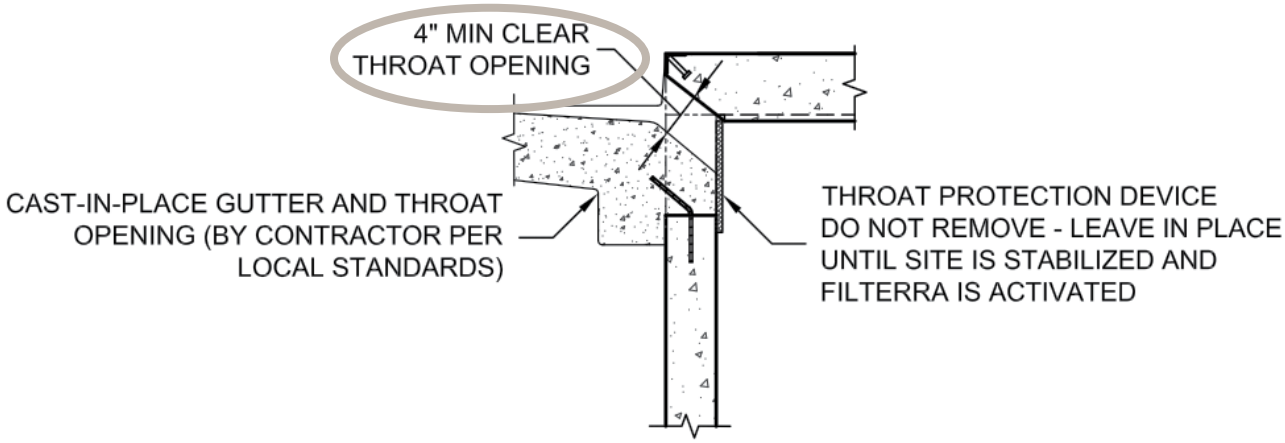
Minimum Requirements

The minimum requirements for Filterra Activation are as follows:

1. The site landscaping must be fully stabilized, i.e. full landscaping installed and some grass cover (not just straw and seed) is required to reduce sediment transport. Construction debris and materials should be removed from surrounding area.

2. Final paving must be completed. Final paving ensures that paving materials will not enter and contaminate the Filterra system during the paving process, and that the plant will receive runoff from the drainage area, assisting with plant survival for the Filterra system.

3. Filterra throat opening should be at least 4" in order to ensure adequate capacity for inflow and debris.



An Activation Checklist is included on page 12 to ensure proper conditions are met for Contech to perform the Activation services. A charge of $500.00 will be invoiced for each Activation visit requested by Customer where Contech determines that the site does not meet the conditions required for Activation.

Filterra Plant Selection Overview

A Plant List has been enclosed with this packet highlighting recommended plants for Filterra systems in your area. Keep in mind that plants are subject to availability due to seasonality and required minimum size for the Filterra system. Plants installed in the Filterra system are container plants (max 15 gallon) from nursery stock and will be immature in height and spread at Activation.

It is the responsibility of the owner to provide adequate irrigation when necessary to the plant of the Filterra system.

The "Planting Requirements for Filterra Systems" document is included as an appendix and discusses proper selection and care of the plants within Filterra systems.

Warranty Overview

Refer to the Contech Engineered Solutions LLC Stormwater Treatment System LIMITED WARRANTY for further information. The following conditions may void the Filterra system's warranty and waive the manufacturer provided Activation and Maintenance services:

- Unauthorized activation or performance of any of the items listed in the activation overview
- Any tampering, modifications or damage to the Filterra system or runoff protection devices
- Removal of any Filterra system components
- Failure to prevent construction related runoff from entering the Filterra system
- Failure to properly store and protect any Filterra components (including media and underdrain stone) that may be shipped separately from the vault

Routine Maintenance Guidelines

With proper routine maintenance, the biofiltration media within the Filterra system should last as long as traditional bioretention media. Routine maintenance is included by the manufacturer on all Filterra systems for the first year after activation. This includes a maximum of 2 visits to remove debris, replace pretreatment mulch, and prune the vegetation. More information is provided in the Operations and Maintenance Guidelines. Some Filterra systems also contain pretreatment or outlet bays. Depending on site pollutant loading, these bays may require periodic removal of debris, however this is not included in the first year of maintenance, and would likely not be required within the first year of operation.

These services, as well as routine maintenance outside of the included first year, can be provided by certified maintenance providers listed on the Contech website. Training can also be provided to other stormwater maintenance or landscape providers.

Why Maintain?

All stormwater treatment systems require maintenance for effective operation. This necessity is often incorporated in your property's permitting process as a legally binding BMP maintenance agreement. Other reasons to maintain are:

- Avoiding legal challenges from your jurisdiction's maintenance enforcement program.
- Prolonging the expected lifespan of your Filterra media.
- Avoiding more costly media replacement.
- Helping reduce pollutant loads leaving your property.

Simple maintenance of the Filterra is required to continue effective pollutant removal from stormwater runoff before discharge into downstream waters. This procedure will also extend the longevity of the living biofilter system. The unit will recycle and accumulate pollutants within the biomass, but is also subjected to other materials entering the inlet. This may include trash, silt and leaves etc. which will be contained above the mulch layer. Too much silt may inhibit the Filterra's flow rate, which is the reason for site stabilization before activation. Regular replacement of the mulch stops accumulation of such sediment.

When to Maintain?

Contech includes a 1-year maintenance plan with each system purchase. Annual included maintenance consists of a maximum of two (2) scheduled visits. Additional maintenance may be necessary depending on sediment and trash loading (by Owner or at additional cost). The start of the maintenance plan begins when the system is activated.

Maintenance visits are scheduled seasonally; the spring visit aims to clean up after winter loads including salts and sands while the fall visit helps the system by removing excessive leaf litter.

It has been found that in regions which receive between 30-50 inches of annual rainfall, (2) two visits are generally required; regions with less rainfall often only require (1) one visit per annum. Varying land uses can affect maintenance frequency; e.g. some fast food restaurants require more frequent trash removal. Contributing drainage areas which are subject to new development wherein the recommended erosion and sediment control measures have not been implemented may require additional maintenance visits.

Some sites may be subjected to extreme sediment or trash loads, requiring more frequent maintenance visits. This is the reason for detailed notes of maintenance actions per unit, helping the Supplier and Owner predict future maintenance frequencies, reflecting individual site conditions.

Owners must promptly notify the (maintenance) Supplier of any damage to the plant(s), which constitute(s) an integral part of the bioretention technology. Owners should also advise other landscape or maintenance contractors to leave all maintenance to the Supplier (i.e. no pruning or fertilizing) during the first year.

Exclusion of Services

Clean up due to major contamination such as oils, chemicals, toxic spills, etc. will result in additional costs and are not covered under the Supplier maintenance contract. Should a major contamination event occur the Owner must block off the outlet pipe of the Filterra (where the cleaned runoff drains to, such as drop inlet) and block off the throat of the Filterra. The Supplier should be informed immediately.

Maintenance Visit Summary

Each maintenance visit consists of the following simple tasks (detailed instructions below).

1. Inspection of Filterra and surrounding area
2. Removal of tree grate and erosion control stones
3. Removal of debris, trash and mulch
4. Mulch replacement
5. Plant health evaluation and pruning or replacement as necessary
6. Clean area around Filterra
7. Complete paperwork

Maintenance Tools, Safety Equipment and Supplies

Ideal tools include: camera, bucket, shovel, broom, pruners, hoe/rake, and tape measure. Appropriate Personal Protective Equipment (PPE) should be used in accordance with local or company procedures. This may include impervious gloves where the type of trash is unknown, high visibility clothing and barricades when working in close proximity to traffic and also safety hats and shoes. A T-Bar or crowbar should be used for moving the tree grates (up to 170 lbs ea.). Most visits require minor trash removal and a full replacement of mulch. See below for actual number of bagged mulch that is required in each media bay size. Mulch should be a double shredded, hardwood variety. Some visits may require additional Filterra engineered soil media available from the Supplier.

Box Length	Box Width	Filter Surface Area (ft^2)	Volume at 3" (ft^3)	# of 2 ft^3 Mulch Bags
4	4	16	4	2
6	4	24	6	3
8	4	32	8	4
6	6	36	9	5
8	6	48	12	6
10	6	60	15	8
12	6	72	18	9
13	7	91	23	12

Maintenance Visit Procedure

Keep sufficient documentation of maintenance actions to predict location specific maintenance frequencies and needs. An example Maintenance Report is included in this manual.

1. Inspection of Filterra and surrounding area

- Record individual unit before maintenance with photograph (numbered). Record on Maintenance Report (see example in this document) the following:

Record on Maintenance Report the following:

Standing Water	yes | no
Damage to Box Structure	yes | no
Damage to Grate	yes | no
Is Bypass Clear	yes | no

If yes answered to any of these observations, record with close-up photograph (numbered).

2. Removal of tree grate and erosion control stones

- Remove cast iron grates for access into Filterra box.
- Dig out silt (if any) and mulch and remove trash & foreign items.

3. Removal of debris, trash and mulch

Record on Maintenance Report the following:

Silt/Clay	yes | no
Cups/ Bags	yes | no
Leaves	yes | no
Buckets Removed	_____

- After removal of mulch and debris, measure distance from the top of the Filterra engineered media soil to the top of the top slab. Compare the measured distance to the distance shown on the approved Contract Drawings for the system. Add Filterra media (not top soil or other) to bring media up as needed to distance indicated on drawings.

Record on Maintenance Report the following:

Distance to Top of Top Slab (inches)	_____
Inches of Media Added	_____

4. Mulch replacement

- Add double shredded mulch evenly across the entire unit to a depth of 3".
- Refer to Filterra Mulch Specifications for information on acceptable sources.
- Ensure correct repositioning of erosion control stones by the Filterra inlet to allow for entry of trash during a storm event.
- Replace Filterra grates correctly using appropriate lifting or moving tools, taking care not to damage the plant.

5. Plant health evaluation and pruning or replacement as necessary

- Examine the plant's health and replace if necessary.
- Prune as necessary to encourage growth in the correct directions

Record on Maintenance Report the following:

Height above Grate	_____ (ft)
Width at Widest Point	_____ (ft)
Health	healthy | unhealthy
Damage to Plant	yes | no
Plant Replaced	yes | no

6. Clean area around Filterra

- Clean area around unit and remove all refuse to be disposed of appropriately.

7. Complete paperwork

- Deliver Maintenance Report and photographs to appropriate location (normally Contech during maintenance contract period).
- Some jurisdictions may require submission of maintenance reports in accordance with approvals. It is the responsibility of the Owner to comply with local regulations.

Maintenance Checklist

Drainage System Failure	Problem	Conditions to Check	Condition that Should Exist	Actions
Inlet	Excessive sediment or trash accumulation.	Accumulated sediments or trash impair free flow of water into Filterra.	Inlet should be free of obstructions allowing free distributed flow of water into Filterra.	Sediments and/or trash should be removed.
Mulch Cover	Trash and floatable debris accumulation.	Excessive trash and/or debris accumulation.	Minimal trash or other debris on mulch cover.	Trash and debris should be removed and mulch cover raked level. Ensure bark nugget mulch is not used.
Mulch Cover	"Ponding" of water on mulch cover.	"Ponding" in unit could be indicative of clogging due to excessive fine sediment accumulation or spill of petroleum oils.	Stormwater should drain freely and evenly through mulch cover.	Recommend contact manufacturer and replace mulch as a minimum.
Vegetation	Plants not growing or in poor condition.	Soil/mulch too wet, evidence of spill. Incorrect plant selection. Pest infestation. Vandalism to plants.	Plants should be healthy and pest free.	Contact manufacturer for advice.
Vegetation	Plant growth excessive.	Plants should be appropriate to the species and location of Filterra.		Trim/prune plants in accordance with typical landscaping and safety needs.
Structure	Structure has visible cracks.	Cracks wider than 1/2 inch or evidence of soil particles entering the structure through the cracks.		Vault should be repaired.
Maintenance is ideally to be performed twice annually.				

Filterra Inspection & Maintenance Log

Filterra System Size/Model:_____ **Location:** _____

Date	Mulch & Debris Removed	Depth of Mulch Added	Mulch Brand	Height of Vegetation Above Grate	Vegetation Species	Issues with System	Comments
1/1/17	*5 – 5 gal Buckets*	*3″*	*Lowe's Premium Brown Mulch*	*4′*	*Galaxy Magnolia*	*- Standing water in downstream structure*	*- Removed blockage in downstream structure*

Appendix 1 – Filterra® Activation Checklist

CONTECH ENGINEERED SOLUTIONS

Project Name:____Company:____

Site Contact Name: _______________________________________ Site Contact Phone/Email: ____________________________

Site Owner/End User Name:_________________________Site Owner/End User Phone/Email: ____________________________

Preferred Activation Date: ___________________________________(provide 2 weeks minimum from date this form is submitted)

Site Designation	System Size	Final Pavement / Top Coat Complete	Landscaping Complete / Grass Emerging	Construction materials / Piles / Debris Removed	Throat Opening Measures 4" Min. Height	Plant Species Requested
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	

Attach additional sheets as necessary.

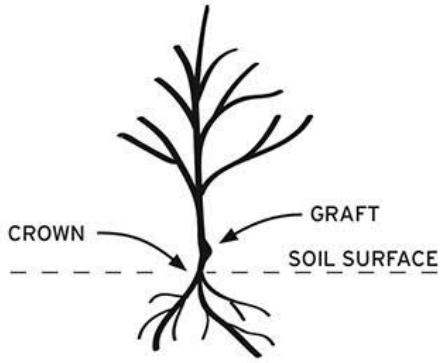
NOTE: A charge of $500.00 will be invoiced for each Activation visit requested by Customer where Contech determines that the site does not meet the conditions required for Activation. ONLY Contech authorized representatives can perform Activation of Filterra systems; unauthorized Activations will void the system warranty and waive manufacturer supplied Activation and 1st Year Maintenance.

____ ________________________________

Signature Date

Appendix 2 – Planting Requirements for Filterra® Systems

Plant Material Selection



- Select plant(s) as specified in the engineering plans and specifications.
- Select plant(s) with full root development but not to the point where root bound.
- Use local nursery container plants only. Ball and burlapped plants are not permitted.
- For precast Filterra systems with a tree grate, plant(s) must not have scaffold limbs at least 14 inches from the crown due to spacing between the top of the mulch and the tree grate. Lower branches can be pruned away provided there are sufficient scaffold branches for tree or shrub development.
- For precast Filterra systems with a tree grate, at the time of installation, it is required that plant(s) must be at least 6" above the tree grate opening at installation for all Filterra configurations. This DOES NOT apply to Full Grate Cover designs.
- Plant(s) shall not have a mature height greater than 25 feet.
- For standard 21" media depth, a 7 – 15 gallon container size shall be used. Media less than 21" (Filterra boxes only) will require smaller container plants.
- For precast Filterra systems, plant(s) should have a single trunk at installation, and pruning may be necessary at activation and maintenance for some of the faster growing species, or species known to produce basal sprouts.

Plant Installation

- During transport protect the plant leaves from wind and excessive jostling.
- Prior to removing the plant(s) from the container, ensure the soil moisture is sufficient to maintain the integrity of the root ball. If needed, pre-wet the container plant.
- Cut away any roots which are growing out of the container drain holes. Plants with excessive root growth from the drain holes should be rejected.
- Plant(s) should be carefully removed from the pot by gently pounding on the sides of the container with the fist to loosen root ball. Then carefully slide out. Do not lift plant(s) by trunk as this can break roots and cause soil to fall off. Extract the root ball in a horizontal position and support it to prevent it from breaking apart. Alternatively the pot can be cut away to minimize root ball disturbance.
- Remove any excess soil from above the root flare after removing plant(s) from container.
- Excavate a hole with a diameter 4" greater than the root ball, gently place the plant(s).
- If plant(s) have any circling roots from being pot bound, gently tease them loose without breaking them.
- If root ball has a root mat on the bottom, it should be shaved off with a knife just above the mat line.
- Plant the tree/shrub/grass with the top of the root ball 1" above surrounding media to allow for settling.
- All plants should have the main stem centered in the tree grate (where applicable) upon completion of installation.
- With all trees/shrubs, remove dead, diseased, crossed/rubbing, sharply crotched branches or branches growing excessively long or in wrong direction compared to majority of branches.
- To prevent transplant shock (especially if planting takes place in the hot season), it may be necessary to prune some of the foliage to compensate for reduced root uptake capacity. This is accomplished by pruning away some of the smaller secondary branches or a main scaffold branch if there are too many. Too much foliage relative to the root ball can dehydrate and damage the plant.
- Plant staking may be required.

Mulch Installation

- Only mulch that has been meeting Contech Engineered Solutions' mulch specifications can be used in the Filterra system.
- Mulch must be applied to a depth of 3" evenly over the surface of the media.

Irrigation Requirements

- Each Filterra system must receive adequate irrigation to ensure survival of the living system during periods of drier weather.
- Irrigation sources include rainfall runoff from downspouts and/or gutter flow, applied water through the tree grate or in some cases from an irrigation system with emitters installed during construction.
- At Activation: Apply about one (cool climates) to two (warm climates) gallons of water per inch of trunk diameter over the root ball.
- During Establishment: In common with all plants, each Filterra plant will require more frequent watering during the establishment period. One inch of applied water per week for the first three months is recommended for cooler climates (2 to 3 inches for warmer climates). If the system is receiving rainfall runoff from the drainage area, then irrigation may not be needed. Inspection of the soil moisture content can be evaluated by gently brushing aside the mulch layer and feeling the soil. Be sure to replace the mulch when the assessment is complete. Irrigate as needed**.
- Established Plants: Established plants have fully developed root systems and can access the entire water column in the media. Therefore irrigation is less frequent but requires more applied water when performed. For a mature system assume 3.5 inches of available water within the media matrix. Irrigation demand can be estimated as 1" of irrigation demand per week. Therefore if dry periods exceed 3 weeks, irrigation may be required. It is also important to recognize that plants which are exposed to windy areas and reflected heat from paved surfaces may need more frequent irrigation. Long term care should develop a history which is more site specific.

** Five gallons per square yard approximates 1 inch of water Therefore for a 6' by 6' Filterra approximately 20-60 gallons of water is needed. To ensure even distribution of water it needs to be evenly sprinkled over the entire surface of the filter bed, with special attention to make sure the root ball is completely wetted. NOTE: if needed, measure the time it takes to fill a five gallon bucket to estimate the applied water flow rate then calculate the time needed to irrigate the Filterra. For example, if the flow rate of the sprinkler is 5 gallons/minute then it would take 12 minutes to irrigate a 6' by 6' filter.

Notes

filterra®
Bioretention Systems

CONTECH®
ENGINEERED SOLUTIONS

9025 Centre Pointe Drive, Suite 400
West Chester, OH 45069
info@conteches.com | 800-338-1122
www.ContechES.com

PDF 6/20

For Information:

Local Sewering Agencies in Riverside County:

City of Beaumont	(909) 769-8520
Belair Homeowners Association	(909) 277-1414
City of Banning	(909) 922-3130
City of Blythe	(760) 922-6161
City of Coachella	(760) 391-5008
Coachella Valley Water District	(760) 398-2651
City of Corona	(909) 736-2259
Desert Center, CSA #51	(760) 227-3203
Eastern Municipal Water District	(909) 928-3777
Elsinore Valley MWD	(909) 674-3146
Farm Mutual Water Company	(909) 244-4198
Idyllwild Water District	(909) 659-2143
Jurupa Community Services Dist.	(909) 685-7434
Lake Hemet MWD	(909) 658-3241
Lee Lake Water District	(909) 277-1414
March Air Force Base	(909) 656-7000
Mission Springs Water District	(760) 329-6448
City of Palm Springs	(760) 323-8242
Rancho Caballero	(909) 780-9272
Rancho California Water Dist.	(909) 676-4101
Ripley, CSA #62	(760) 922-4909
Rubidoux Community Services Dist.	(909) 684-7580
City of Riverside	(909) 782-5341
Silent Valley Club, Inc	(909) 849-4501
Valley Sanitary District	(760) 347-2356
Western Municipal Water District	(909) 780-4170

Spill Response Agency:
Haz-Mat: (909) 358-5055
Hazardous Waste Disposal: (909) 358-5055
To Report Illegal Dumping or a Clogged Storm Drain: 1-800-506-2555

StormWater CleanWater
PROTECTION PROGRAM

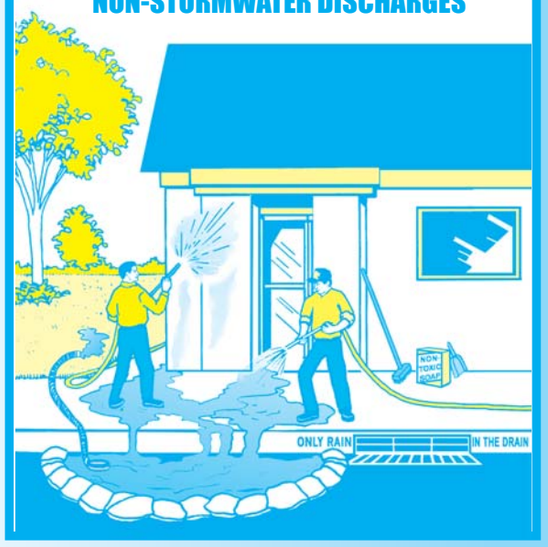
Riverside County gratefully acknowledges the Bay Area Stormwater Management Agencies Association and the Cleaning Equipment Trade Association for information provided in this brochure.

StormWater Pollution

What you should know for...

OUTDOOR CLEANING ACTIVITIES

NON-STORMWATER DISCHARGES



GUIDELINES for disposal of washwater from:

- Sidewalk, plaza or parking lot cleaning
- Vehicle washing or detailing
- Building exterior cleaning
- Waterproofing
- Equipment cleaning or degreasing

Do you know . . . where the water should go?

Riverside County has two drainage systems - sanitary sewers and storm drains. The storm drain system is designed to prevent flooding by carrying excess rainwater away from streets. . . it's not designed to be a waste disposal system. Since the storm drain system does not provide for water treatment, it often serves the unintended function of transporting pollutants directly to our waterways.

Unlike sanitary sewers, storm drains are not connected to a treatment plant - they flow directly to our local streams, rivers and lakes.

Non-stormwater discharges such as washwater generated from outdoor cleaning projects often transport harmful pollutants into storm drains and our local waterways. Polluted runoff contaminates local waterways and poses a threat to groundwater resources.

Soaps, degreasers, automotive fluids, litter, and a host of other materials washed off buildings, sidewalks, plazas, parking areas, vehicles, and equipment can all pollute our waterways.

The Cities and County of Riverside StormWater/CleanWater Protection Program

Since preventing pollution is much easier, and less costly than cleaning up "after the fact," the Cities and County of Riverside StormWater/CleanWater Protection Program informs residents and businesses of pollution prevention activities such as those described in this pamphlet.

The Cities and County of Riverside have adopted ordinances for stormwater management and discharge control. In accordance with state and federal law, these local stormwater ordinances **prohibit** the discharge of wastes into the storm drain system or local surface waters. This includes non-stormwater discharges containing oil, grease, detergents, degreasers, trash, or other waste materials.

PLEASE NOTE: The discharge of pollutants into the street, gutters, storm drain system, or waterways - without a Regional Water Quality Control Board permit or waiver - is ***strictly prohibited*** by local ordinances and state and federal law.

Help Protect Our Waterways!

Use These Guidelines For Outdoor Cleaning Activities and Washwater Disposal

DO . . . Dispose of **small amounts** of **washwater from cleaning building exteriors, sidewalks, or plazas** onto landscaped or unpaved surfaces provided you have the owner's permission and the discharge will not cause flooding or nuisance problems, or flow into a storm drain.

DO NOT . . . Discharge **large amounts** of these types of washwater onto landscaped areas or soil where water may run to a street or storm drain. Wastewater from exterior cleaning may be pumped to a sewer line with specific permission from the local sewering agency.

DO . . . Check with your local sewering agency's policies and requirements concerning waste water disposal. **Water from many outdoor cleaning activities** may be acceptable for disposal to the sewer system. See the list on the back of this flyer for phone numbers of the sewering agencies in your area.

DO NOT . . . Pour **hazardous wastes** or toxic materials into the storm drain or sewer system . . . properly dispose of it instead. When in doubt, contact the local sewering agency! The agency will tell you what types of liquid wastes can be accepted.

DO . . . Understand that **water (without soap) used to remove dust from clean vehicles** may be discharged to a street or storm drain. **Washwater from sidewalk, plaza, and building surface cleaning** may go into a street or storm drain if ALL of the following conditions are met:

1) The surface being washed is free of residual oil stains, debris and similar pollutants by using dry cleanup methods (sweeping, and cleaning any oil or chemical spills with rags or other absorbent materials before using water).
2) Washing is done with water only - no soap or other cleaning materials.
3) You have not used the water to remove paint from surfaces during cleaning.

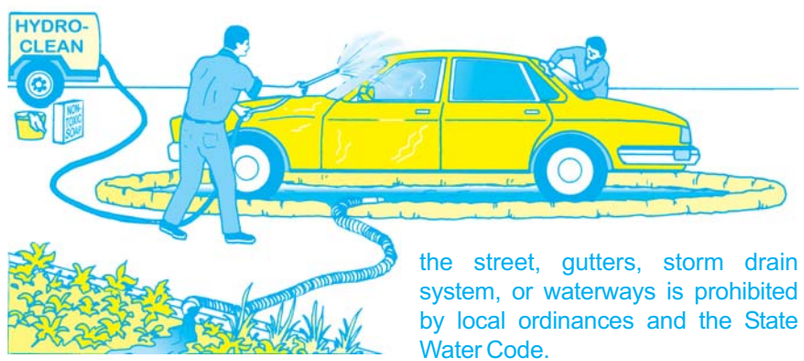
DO NOT . . . Dispose of water containing **soap or any other type of cleaning agent** into a storm drain or water body. This is a direct violation of state and/or local regulations. Because **wastewater from cleaning parking areas or roadways** normally contains metallic brake pad dust, oil and other automotive fluids, it should never be discharged to a street, gutter, or storm drain.

DO . . . Understand that **mobile auto detailers** should divert washwater to landscaped or dirt areas. Note: Be aware that soapy washwater may adversely affect landscaping; consult with the property owner. Residual washwater may remain on paved surfaces to evaporate; sweep up any remaining residue. If there is sufficient water volume to reach the storm drain, collect the runoff and obtain permission to pump it into the sanitary sewer. Follow local sewering agency's requirements for disposal.

DO NOT . . . Dispose of left over cleaning agents into the gutter, storm drain or sanitary sewer.

Regarding Cleaning Agents:

If you must use soap, use biodegradable/phosphate free cleaners. Avoid use of petroleum based cleaning products. Although the use of nontoxic cleaning products is strongly encouraged, ***do*** understand that these products can still degrade water quality and, therefore, the discharge of these products into



the street, gutters, storm drain system, or waterways is prohibited by local ordinances and the State Water Code.

Note: When cleaning surfaces with a high pressure washer or steam cleaning methods, additional precautions should be taken to prevent the discharge of pollutants into the storm drain system. These two methods of surface cleaning, as compared to the use of a low pressure hose, can remove additional materials that can contaminate local waterways.

Other Tips to Help Protect Our Water . . .

Screening Wash Water

A thorough dry cleanup before washing (without soap) surfaces such as building exteriors and decks without loose paint, sidewalks, or plaza areas, *should be sufficient to protect storm drains.* **However**, if any debris (solids) could enter storm drains or remain in the gutter or street after cleaning, washwater should first pass through a "20 mesh" or finer screen to catch the solid material, which should then be disposed of in the trash.

Drain Inlet Protection/ Containing & Collecting Wash Water

- Sand bags can be used to create a barrier around storm drain inlets.
- Plugs or rubber mats can be used to temporarily seal storm drain openings.
- You can also use vacuum booms, containment pads, or temporary berms to keep wash water away from the street, gutter, or storm drain.

Equipment and Supplies

Special materials such as absorbents, storm drain plugs and seals, small sump pumps, and vacuum booms are available from many vendors. For more information check catalogs such as New Pig (800-468-4647), Lab Safety Supply (800-356-0783), C&H (800-558-9966), and W.W. Grainger (800-994-9174); or call the Cleaning Equipment Trade Association (800-441-0111) or the Power Washers of North America (800-393-PWNA).

Helpful telephone numbers and links:

Riverside County Stormwater Protection Partners

Flood Control District	(951) 955-1200
County of Riverside	(951) 955-1000
City of Banning	(951) 922-3105
City of Beaumont	(951) 769-8520
City of Calimesa	(909) 795-9801
City of Canyon Lake	(951) 244-2955
Cathedral City	(760) 770-0327
City of Coachella	(760) 398-4978
City of Corona	(951) 736-2447
City of Desert Hot Springs	(760) 329-6411
City of Eastvale	(951) 361-0900
City of Hemet	(951) 765-2300
City of Indian Wells	(760) 346-2489
City of Indio	(760) 391-4000
City of Lake Elsinore	(951) 674-3124
City of La Quinta	(760) 777-7000
City of Menifee	(951) 672-6777
City of Moreno Valley	(951) 413-3000
City of Murrieta	(951) 304-2489
City of Norco	(951) 270-5607
City of Palm Desert	(760) 346-0611
City of Palm Springs	(760) 323-8299
City of Perris	(951) 943-6100
City of Rancho Mirage	(760) 324-4511
City of Riverside	(951) 361-0900
City of San Jacinto	(951) 654-7337
City of Temecula	(951) 694-6444
City of Wildomar	(951) 677-7751

REPORT ILLEGAL STORM DRAIN DISPOSAL
1-800-506-2555 or e-mail us at
fcnpdes@rcflood.org

- Riverside County Flood Control and Water Conservation District
  www.rcflood.org

Online resources include:

- California Storm Water Quality Association
  www.casqa.org
- State Water Resources Control Board
  www.waterboards.ca.gov
- Power Washers of North America
  www.thepwna.org

Stormwater Pollution

What you should know for...

Outdoor Cleaning Activities and Professional Mobile Service Providers

Storm drain pollution prevention information for:

- Car Washing / Mobile Detailers
- Window and Carpet Cleaners
- Power Washers
- Waterproofers / Street Sweepers
- Equipment cleaners or degreasers and all mobile service providers

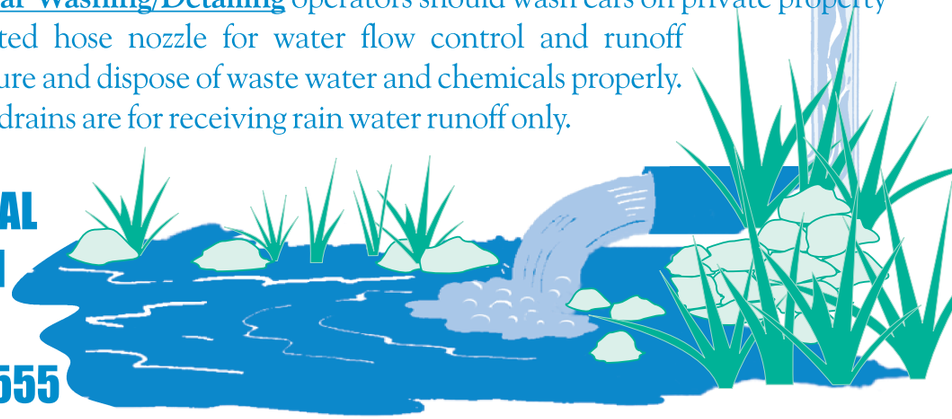
Do you know where street flows actually go?

Storm drains are NOT connected to sanitary sewer systems and treatment plants!

The primary purpose of storm drains is to carry *rain* water away from developed areas to prevent flooding. Pollutants discharged to storm drains are transported directly into rivers, lakes and streams. Soaps, degreasers, automotive fluids, litter and a host of materials are washed off buildings, sidewalks, plazas and parking areas. Vehicles and equipment must be properly managed to prevent the pollution of local waterways.

Unintentional spills by mobile service operators can flow into storm drains and pollute our waterways. **Avoid mishaps.** *Always* have a **Spill Response Kit** on hand to clean up unintentional spills. Only emergency **Mechanical** repairs should be done in City streets, using drip pans for spills. **Plumbing** should be done on private property. Always store chemicals in a leak-proof container and keep covered when not in use. **Window/Power Washing** waste water shouldn't be released into the streets, but should be disposed of in a sanitary sewer, landscaped area or in the soil. Soiled **Carpet Cleaning** wash water should be filtered before being discharged into the sanitary sewer. Dispose of all filter debris properly. **Car Washing/Detailing** operators should wash cars on private property and use a regulated hose nozzle for water flow control and runoff prevention. Capture and dispose of waste water and chemicals properly. Remember, storm drains are for receiving rain water runoff only.

REPORT ILLEGAL STORM DRAIN DISPOSAL 1-800-506-2555



Help Protect Our Waterways!

Use these guidelines for Outdoor Cleaning Activities and Wash Water Disposal

Did you know that disposing of pollutants into the street, gutter, storm drain or body of water is *PROHIBITED* by law and can result in stiff penalties?

Best Management Practices

Waste wash water from Mechanics, Plumbers, Window/Power Washers, Carpet Cleaners, Car Washing and Mobile Detailing activities may contain significant quantities of motor oil, grease, chemicals, dirt, detergents, brake pad dust, litter and other materials.

Best Management Practices, or BMPs as they are known, are guides to prevent pollutants from entering the storm drains. ***Each of us*** can do our part to keep stormwater clean by using the suggested BMPs below:

Simple solutions for both light and heavy duty jobs:

Do...consider dry cleaning methods first such as a mop, broom, rag or wire brush. Always keep a spill response kit on site.

Do...prepare the work area before power cleaning by using sand bags, rubber mats, vacuum booms, containment pads or temporary berms to keep wash water away from the gutters and storm drains.

Do...use vacuums or other machines to remove and collect loose debris or litter before applying water.

Do...obtain the property owner's permission to dispose of ***small amounts*** of power washing waste water on to landscaped, gravel or unpaved surfaces.

Do...check your local sanitary sewer agency's policies on wash water disposal regulations before disposing of wash water into the sewer. (See list on reverse side)

Do...be aware that if discharging to landscape areas, soapy wash water may damage landscaping. Residual wash water may remain on paved surfaces to evaporate. Sweep up solid residuals and dispose of properly. Vacuum booms are another option for capturing and collecting wash water.

Do...check to see if local ordinances prevent certain activities.

Do not let...wash or waste water from sidewalk, plaza or building cleaning go into a street or storm drain.

Report illegal storm drain disposal
Call Toll Free
1-800-506-2555

Using Cleaning Agents

Try using biodegradable/phosphate-free products. They are easier on the environment, but don't confuse them with being toxic free. Soapy water entering the storm drain system can impact the delicate aquatic environment.

When cleaning surfaces with a ***high-pressure washer*** or ***steam cleaner***, additional precautions should be taken to prevent the discharge of pollutants into the storm drain system. These two methods of surface cleaning can loosen additional material that can contaminate local waterways.

Think Water Conservation

Minimize water use by using high pressure, low volume nozzles. Be sure to check all hoses for leaks. Water is a precious resource, don't let it flow freely and be sure to shut it off in between uses.

Screening Wash Water

Conduct thorough dry cleanup before washing exterior surfaces, such as buildings and decks ***with loose paint***, sidewalks or plaza areas. Keep debris from entering the storm drain after cleaning by first passing the wash water through a "20 mesh" or finer screen to catch the solid materials, then dispose of the mesh in a refuse container. Do not let the remaining wash water enter a street, gutter or storm drain.

Drain Inlet Protection & Collection of Wash Water

- Prior to any washing, block all storm drains with an impervious barrier such as sandbags or berms, or seal the storm drain with plugs or other appropriate materials.
- Create a containment area with berms and traps or take advantage of a low spot to keep wash water contained.
- Wash vehicles and equipment on grassy or gravel areas so that the wash water can seep into the ground.
- Pump or vacuum up all wash water in the contained area.

Concrete/Coring/Saw Cutting and Drilling Projects

Protect any down-gradient inlets by using dry activity techniques whenever possible. If water is used, minimize the amount of water used during the coring/drilling or saw cutting process. Place a barrier of sandbags and/or absorbent berms to protect the storm drain inlet or watercourse. Use a shovel or wet vacuum to remove the residue from the pavement. Do not wash residue or particulate matter into a storm drain inlet or watercourse.

For Information:

For more information on the General Industrial Storm Water Permit contact:

State Water Resources Control Board (SWRCB)
(916) 657-1146 or www.swrcb.ca.gov/ or, at your Regional Water Quality Control Board (RWQCB).

Santa Ana Region (8)
California Tower
3737 Main Street, Ste. 500
Riverside, CA 92501-3339
(909) 782-4130

San Diego Region (9)
9771 Clairemont Mesa Blvd., Ste. A
San Diego, CA 92124
(619) 467-2952

Colorado River Basin Region (7)
73-720 Fred Waring Dr., Ste. 100
Palm Desert, CA 92260
(760) 346-7491

SPILL RESPONSE AGENCY:
HAZ-MAT: (909) 358-5055
HAZARDOUS WASTE DISPOSAL: (909) 358-5055
RECYCLING INFORMATION: 1-800-366-SAVE
TO REPORT ILLEGAL DUMPING OR A CLOGGED STORM DRAIN: 1-800-506-2555

To order additional brochures or to obtain information on other pollution prevention activities, call:
(909) 955-1111.

StormWater
CleanWater
PROTECTION PROGRAM

Riverside County gratefully acknowledges the State Water Quality Control Board and the American Public Works Association, Storm Water Quality Task Force for the information provided in this brochure.

DID YOU KNOW . . .

YOUR FACILITY MAY NEED A STORM WATER PERMIT?

Many industrial facilities and manufacturing operations must obtain coverage under the Industrial Activities Storm Water General Permit

FIND OUT IF YOUR FACILITY MUST OBTAIN A PERMIT

StormWater Pollution . . . What you should know

Riverside County has two drainage systems - sanitary sewers and storm drains. The storm drain system is designed to help prevent flooding by carrying excess rainwater away from streets. Since the storm drain system does not provide for water treatment, it also serves the *unintended* function of transporting pollutants directly to our waterways.

Unlike sanitary sewers, storm drains are not connected to a treatment plant - they flow directly to our local streams, rivers and lakes.

In recent years, awareness of the need to protect water quality has increased. As a result, federal, state, and local programs have been established to reduce polluted stormwater discharges to our waterways. The emphasis of these programs is to prevent stormwater pollution since it's much easier, and less costly, than cleaning up "after the fact."

National Pollutant Discharge Elimination System (NPDES)

In 1987, the Federal Clean Water Act was amended to establish a framework for regulating industrial stormwater discharges under the NPDES permit program. In California, NPDES permits are issued by the State Water Resources Control Board (SWRCB) and the nine (9) Regional Water Quality Control Boards (RWQCB). In general, certain industrial facilities and manufacturing operations must obtain coverage under the Industrial Activities Storm Water General Permit if the type of facilities or operations falls into one of the several categories described in this brochure.

How Do I Know If I Need A Permit?

Following are ***general descriptions*** of the industry categories types that are regulated by the Industrial Activities Storm Water General Permit. Contact your local Region Water Quality Control Board to determine if your facility/operation requires coverage under the Permit.

➜ Facilities such as cement manufacturing; feedlots; fertilizer manufacturing; petroleum refining; phosphate manufacturing; steam electric power generation; coal mining; mineral mining and processing; ore mining and dressing; and asphalt emulsion;

➜ Facilities classified as lumber and wood products (except wood kitchen cabinets); pulp, paper, and paperboard mills; chemical producers (except some pharmaceutical and biological products); petroleum and coal products; leather production and products; stone, clay and glass products; primary metal industries; fabricated structural metal; ship and boat building and repairing;

➜ Active or inactive mining operations and oil and gas exploration, production, processing, or treatment operations;

➜ Hazardous waste treatment, storage, or disposal facilities;

➜ Landfills, land application sites and open dumps that receive or have received any industrial waste; unless there is a new overlying land use such as a golf course, park, etc., and there is no discharge associated with the landfill;

➜ Facilities involved in the recycling of materials, including metal scrap yards, battery reclaimers, salvage yards, and automobile junkyards;

➜ Steam electric power generating facilities, facilities that generate steam for electric power by combustion;

➜ Transportation facilities that have vehicle maintenance shops, fueling facilities, equipment cleaning operations, or airport deicing operations. This includes school bus maintenance facilities operated by a school district;

➜ Sewage treatment facilities;

➜ Facilities that have areas where material handling equipment or activities, raw materials, intermediate products, final products, waste materials, by-products, or industrial machinery are exposed to storm water.

How do I obtain coverage under the Industrial Activities Storm Water General Permit?

Obtain a permit application package from your local Regional Water Quality Control Board listed on the back of this brochure or the State Water Resources Control Board (SWRCB). Submit a completed Notice of Intent (NOI) form, site map and the appropriate fee ($250 or $500) to the SWRCB. Facilities must submit an NOI thirty (30) days prior to beginning operation. Once you submit the NOI, the State Board will send you a letter acknowledging receipt of your NOI and will assign your facility a waste discharge identification number (WDID No.). You will also receive an annual fee billing. These billings should roughly coincide with the date the State Board processed your original NOI submittal.

What are the requirements of the Industrial Activities Storm Water General Permit?

The basic requirements of the Permit are:

1. The facility must eliminate any non-stormwater discharges or obtain a separate permit for such discharges.

2. The facility must develop and implement a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP must identify sources of pollutants that may be exposed to stormwater. Once the sources of pollutants have been identified, the facility operator must develop and implement Best Management Practices (BMPs) to minimize or prevent polluted runoff.

   Guidance in preparing a SWPPP is available from a document prepared by the California Storm Water Quality Task Force called the California Storm Water Best Management Practice Handbook.

3. The facility must develop and implement a Monitoring Program that includes conducting visual observations and collecting samples of the facility's storm water discharges associated with industrial activity. The General Permit requires that the analysis be conducted by a laboratory that is certified by the State of California.

4. The facility must submit to the Regional Board, every July 1, an annual report that includes the results of its monitoring program.

A Non-Storm Water Discharge is... *any discharge to a storm drain system that is not composed entirely of storm water. The following non-storm water discharges are authorized by the General Permit: fire hydrant flushing; potable water sources, including potable water related to the operation, maintenance, or testing of potable water systems; drinking fountain water; atmospheric condensates including refrigeration, air conditioning, and compressor condensate; irrigation drainage; landscape watering; springs; non-contaminated ground water; foundation or footing drainage; and sea water infiltration where the sea waters are discharged back into the sea water source.*

A BMP is . . . *a technique, process, activity, or structure used to reduce the pollutant content of a storm water discharge. BMPs may include simple, non-structural methods such as good housekeeping, staff training and preventive maintenance. Additionally, BMPs may include structural modifications such as the installation of berms, canopies or treatment control (e.g. setting basins, oil/water separators, etc.)*

WARNING*: There are significant penalties for non-compliance: a minimum fine of $5,000 for failing to obtain permit coverage, and, up to $10,000 per day, per violation plus $10 per gallon of discharge in excess of 1,000 gallons.*

Stormwater Pollution

What you should know for...

Industrial & Commercial Facilities

Riverside County Stormwater Program Members

City of Banning
(951) 922-3105

City of Beaumont
(951) 769-8520

City of Calimesa
(909) 795-9801

City of Canyon Lake
(951) 244-2955

City of Cathedral City
(760) 770-0340

City of Coachella
(760) 398-3502

City of Corona
(951) 736-2447

City of Desert Hot Springs
(760) 329-6411

City of Eastvale
(951) 361-0900

City of Hemet
(951) 765-2300

City of Indian Wells
(760) 346-2489

City of Indio
(760) 391-4000

City of Jurupa Valley
(951) 332-6464

City of Lake Elsinore
(951) 674-3124

City of La Quinta
(760) 777-7000

City of Menifee
(951) 672-6777

City of Moreno Valley
(951) 413-3000

City of Murrieta
(951) 304-2489

City of Norco
(951) 270-5607

City of Palm Desert
(760) 346-0611

City of Palm Springs
(760) 323-8299

City of Perris
(951) 943-6100

City of Rancho Mirage
(760) 324-4511

City of Riverside
(951) 826-5311

City of San Jacinto
(951) 487-7330

City of Temecula
(951) 694-6444

City of Wildomar
(951) 677-7751

Coachella Valley Water District
(760) 398-2651

County of Riverside
(951) 955-1000

Riverside County Flood Control District
(951) 955-1200

Best Management Practices (BMPS) for:

- Industrial Facilities
- Commercial Facilities

YOU can prevent Stormwater Pollution following these practices...

Industrial and Commercial Facilities

The Riverside County Stormwater Program has identified a number of Best Management Practices (BMPs) for Industrial and Commercial Facilities. These BMPs control and reduce stormwater pollutants from reaching our storm drain system and ultimately our local water bodies. City and County ordinances require businesses to use these BMPs to protect our water quality. Local cities and the County are required to verify implementation of these BMPs by performing regular facility inspections.

Prohibited Discharges

Discontinue all non-stormwater discharges to the storm drain system. It is *prohibited* to discharge any chemicals, paints, debris, wastes or wastewater into the gutter, street or storm drain.

Outdoor Storage BMPs

- Install covers and secondary containment areas for all hazardous materials and wastes stored outdoors in accordance with County and/or City standards.
- Keep all temporary waste containers covered, at all times when not in use.
- Sweep outdoor areas instead of using a hose or pressure washer.
- Move all process operations including vehicle/equipment maintenance inside of the building or under a covered and contained area.
- Wash equipment and vehicles in a contained and covered wash bay which is closed-loop or connected to a clarifier sized to local standards and discharged to a sanitary sewer or take them to a commercial car wash.

Spills and Clean Up BMPs

- Keep the work site clean and orderly. Remove debris in a timely fashion. Sweep up the area.
- Clean up spills immediately when they occur, using dry clean up methods such as absorbent materials or sweep followed by proper disposal of materials.
- Always have a spill kit available near chemical loading dock doors and vehicle maintenance and fueling areas.
- Follow your Business Emergency Plan, as filed with the local Fire Department.
- Report all prohibited discharges and non-implementation of BMPs to your local Stormwater Coordinator as listed on the back of this pamphlet.
- Report hazardous materials spills to 951-358-5055 or call after hours to 951-782-2973 or, if an emergency, call the Fire Department's Haz Mat Team at 911.

Plastic Manufacturing Facilities BMPs

AB 258 requires plastic product manufacturers to use BMPs, such as safe storage and clean-up procedures to prevent plastic pellets (nurdles) from entering the waterway. The plastic pellets are released into the environment during transporting, packaging and processing and migrate to waterways through the storm drain system. AB 258 will help protect fish and wildlife from the hazards of plastic pollution.

Training BMPs

As prescribed by your City and County Stormwater Ordinance(s), train employees in spill procedures and prohibit non-stormwater discharges to the storm drain system. Applicable BMP examples can be found at www.cabmphandbooks.com.

Permitting

Stormwater discharges associated with specific categories for industrial facilities are regulated by the State Water Resources Control Board through an Industrial Stormwater General Permit. A copy of this General Permit and application forms are available at: www.waterboards.ca.gov, select stormwater then the industrial quick link.

To report illegal dumping or for more information on stormwater pollution prevention call: 1-800-506-2555 or e-mail us at: fcnpdes@rcflood.org.